

# AUTOMOTIVE INDUSTRIES

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# AUTOMOTIVE INDUSTRIES

VOLUME 58

Philadelphia, Saturday, January 7, 1928

NUMBER 1

## Interest at High Pitch as New York Show Opens

*Industry and public prepared for eventful week. Unusually large number of new models on display. Price changes add zest to situation in low-priced field.*

By John C. Gourlie

**I**F the 28th Annual National Automobile Show which opens in New York today does not surpass the success of its predecessors the fault will not lie with the management or the exhibitors. Never before has the setting for the display of the industry's new products been more favorable and never have these products been better designed to captivate an expectant public.

Motor car buyers have been looking for startling developments and they will not be disappointed. New chassis and new models are being offered in numbers unparalleled in recent years, and the changes are more than in detail. The presentations should convince the most skeptical that the promise of greater value and finer appearances is being fulfilled in the letter and the spirit.

Amazingly low prices are the order of the day. Some important reductions in the low-priced field have already been made known and the competitive position in this respect has undoubtedly been sharpened. Show week should be even more eventful than usual and all these developments serve to quicken public interest.

More power characterizes a majority of the new cars. Engine displacement on the average has been slightly increased, but the engineers are relying more upon greater speeds and higher compressions to attain the results sought. Four-wheel brakes are now virtually universal, and in many of the low-priced cars the wheelbase has been lengthened.

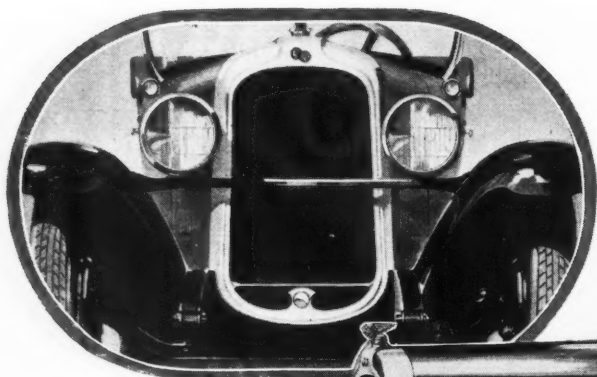
Details of many 1928 announcements will be found in the pages following, rounding out and completing previous descriptions of new products in *Automotive Industries*. Enhanced body appearance, it will be seen, has been gained not only by lengthening of the wheelbase in some cars, but by numerous other devices, and an extension of the search for pleasing color combinations.

Sales policies in 1928, to judge from developments coincident with the opening of the show, will be more aggressive than ever. A single instance out of many is that 56 per cent of the manufacturers are displaying three or more lines of cars, against 37 per cent a year ago. Included in this classification are the factories distributing multiple lines through a single sales organization.

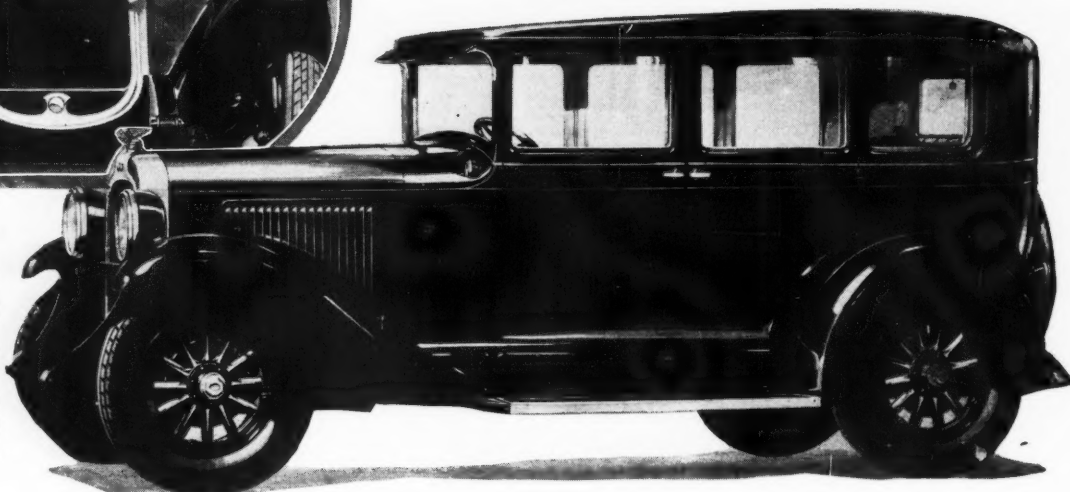
The showing of new cars does not by any means exhaust the interesting aspects of show week. The eminently successful shop equipment exhibit of last year has been retained and expanded, with special periods for exhibition to the trade of the latest products for service and repairs. Trucks will again be on display, as will the new parts and accessories.



# 1928 Pontiac



Above: One of the most striking changes in the new Pontiac six line is the improved frontal appearance. Right: Impression of greater length is created by higher hood and radiator



Higher compression ratio, improvements in manifolding and a new carburetor have increased engine power 12 per cent.  
Bodies are redesigned. No change in prices.

By A. F. Denham

**N**EW bodies and a score of mechanical improvements feature the 1928 Pontiac six line, announced by the Oakland Motor Car Co. Prices remain unchanged, but with mechanical four-wheel brakes, an AC fuel pump, a new type of radiator, higher compression and more efficient cylinder heads, improved manifolding, a new carburetor, a cooling system thermostat, and a new type of steering gear standard, the cars represent decidedly increased values.

At first glance the wheelbase appears to have been increased, but this impression is due entirely to the higher radiator and hood, the deeper roof, higher belt lines and a better streamlining. Such new features as paneled splash pans, headlamp tie rod brackets, a false bottom on the radiator, concealed screws in the running board, a three-part instrument panel, and radiator fluting carried into hood and cowl, all contribute toward the more pleasing appearance.

## Radiator is Interesting

A rather interesting departure from the conventional is found in the radiator, and it is evident that in the design of this unit the manufacturer, the Harrison Radiator Corp., profited from its studies in steam cooling. Starting from the fact that in the average water-cooled system more or less vapor and steam are generated and with the normal type of radiator these pass out through the overflow pipe, a cross-flow core was adopted, with the inlet from the engine about midway up the left side header tank. From here the water flows under pump pressure through the core horizontally to the right side header tank, which is connected at the top to the tank at the top of the radiator. Water is taken from the bottom of the right hand header. With

this design, any steam will most likely be condensed before it gets through the core, and any residue would be cooled rapidly by the cool water in the tank on top of the radiator. The latter, in fact, forms practically a water basin, its contents being almost stagnant, and repeated tests have shown that the water contained in this tank has the lowest temperature in the cooling system. This feature of preventing the escape of vapor is, of course, of particular importance in winter when an alcohol solution is used in the cooling system.

A thing which must be guarded against is letting the water in the radiator drop below the inlet pipe, since the cross-flow would be materially reduced under such conditions. A quick check has been provided for this, however, by placing a water level cock on the radiator inlet pipe. Additional advantages claimed for this type of radiator are a more rapid thawing out in case of a freeze-up, elimination of water loss through the overflow while driving fast (when circulation is rapid), and greater ruggedness due to the fact that three tanks are used as core supports instead of two. Incidentally, the core is made of copper.

In combination with the new radiator is a new system of water outlet manifolding for the cylinder blocks, consisting of two pipes rising from the fronts of the two cylinder heads, and joining in the middle, at which point a circulation controlling thermostat is located. The water pump has been redesigned and now has a double impeller, designed to reduce thrust on the pump bushing by balancing the fan thrust.

The engine now has a cylinder head similar to that on the Oakland All-American model recently described in these columns, its chief feature being a convex baffle over the piston designed to reduce detonation and permit of the use of higher compression, and the com-



# Has Four-Wheel Brakes and Cross-Flow Radiator

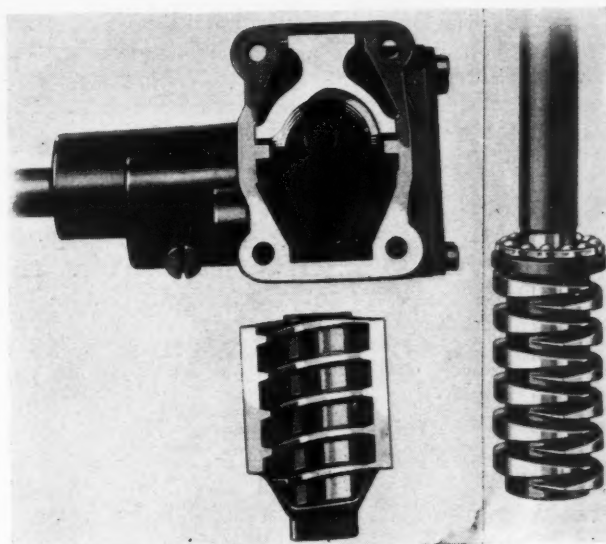
pression ratio has been increased from 4.6 to 4.9. This change in the cylinder head, together with improvements in manifold and the adoption of a new carburetor, has resulted in increasing the engine power 12 per cent, and in eliminating weak spots in the scale of acceleration.

Of Carter manufacture, the new carburetor is equipped with an accelerating well pump, a venturi choke and an internal economizer. A "starting mixture" button on the dash is used instead of the usual "choke." When pulled out it closes the air passage through the venturi and opens the throttle slightly. By this means flooding of the engine is prevented, the interconnection of throttle and choke being so designed as to provide an idling speed equivalent to a car speed of 15 m.p.h., and the engine can be kept running at this speed until the lubricating oil is warm. The internal economizer consists of a sleeve valve controlling a series of ports in the standpipe below the venturi. It "leans" the mixture with the throttle partly open or at ordinary driving speed, and closes the ports, providing a richer mixture and higher power, at wide open throttle.

## Mounted on Carburetor

The accelerating pump is not an integral part of the carburetor but is mounted on it. It injects spurts of gasoline into the air stream whenever the throttle is suddenly opened for rapid acceleration. The intake manifold diameter has been increased  $\frac{1}{8}$  in.

Three changes in engine accessories have been made which correspond to similar changes in the Oakland engine announced some time ago. The new Pontiac engine has heat control for the inlet manifold, an AC fuel pump, and a crankcase ventilating system. There have been practically no changes in the engine proper, except that silchrome exhaust valves were adopted some

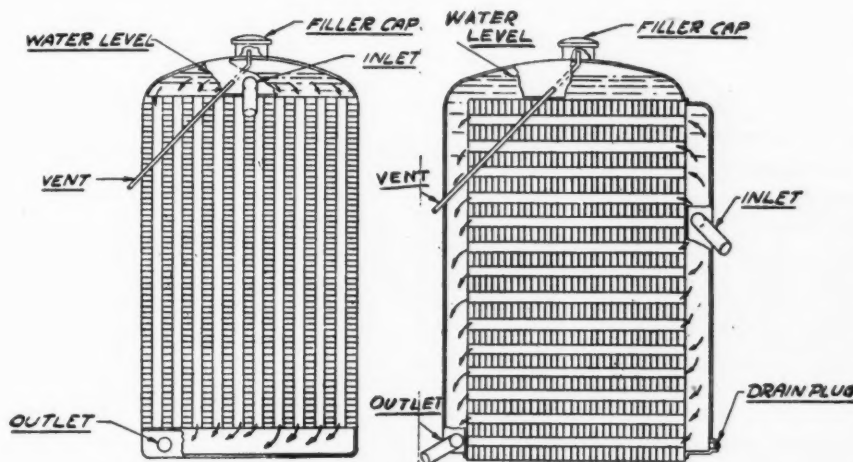


Pontiac double thread steering gear

time ago, which are particularly resistant to the effects of doped fuels.

A new clutch is used, but that, too, is similar to the new clutch of the Oakland, being of the single plate push type and having a ball-type release bearing. The only change in connection with the transmission is the adoption of a gearshift lock, operated coincidentally with the ignition by a switch on the instrument panel, from which a steelclad cable runs to the transmission. Rear axles remain unchanged, except for a slight alteration in the service brakes, to adapt them to four-wheel brake linkage.

The front axle is of new design. Being equipped with internal front wheel brakes, it has inclined knuckle pins which are fitted with ball thrust bearings. The center section provides an inch more ground clearance than formerly but the height of the bodies is not increased, as a double drop frame is now used. The steering tie rod has ball joints, and is provided with a simple take-up by using left and right threads at the ends, with locking clamps locating them in position. Front wheels are mounted on ball bearings as formerly, but these are closer together. The front wheel brakes are of the two-shoe type, the shoes being of pressed steel, anchored at their lower ends and expanded at their upper ends by a floating cam.



Details of Pontiac cross-flow radiator



Equalization of front and rear wheel brakes is obtained by the use of double rocker cross-shafts amidships of the frame, the equalizer being mounted between the cross-shafts. The internal rear wheel emergency brake is retained. Brackets for the cross-shaft supports are made of two pieces of pressed steel, riveted together and cupped at the bearing points, oil-soaked felt rings being placed in the cups for lubrication purposes.

A new design of steering gear has been adopted, its leading feature being that the half nuts are guided on each side in the plane of the split instead of at the back, as formerly, this change having been effective in reducing "binding" of the gear. Bronze is now used for the half nuts, instead of cast iron. The screw diameter is larger, and screw and nuts are burnished. The steering column has been lengthened by  $1\frac{1}{4}$  in.

#### Frame is Heavier

The frame is heavier and has a kick-up over the front axle. Side rails have been increased in depth  $\frac{1}{2}$  in. to 5 in., and cross members made heavier. The rear cross member has been replaced by a wide pressed steel pan. The side rails retain their full depth to in front of the front spring rear support, for greater stiffness at the front. There are three running board hangers instead of two, the front hanger serving also for the front fender rear support.

A muffler of the same type as on the Oakland is fitted, and it, as well as the fuel tank, is more rigidly supported by pressed steel brackets. The wheels have heavier spokes and larger hubs.

A "weak link" feature is included in the distributor and oil pump drive, so that if the oil pump should freeze, the distributor drive gear pin would be sheared and the engine stopped. Frames are drilled for the installation of Delco-Remy-Lovejoy shock absorbers,

which are being offered as extra items of equipment.

Efforts have been made to improve the appearance of the car, and the heights of the radiator and hood have been increased  $1\frac{1}{8}$  and 1 in., respectively. With the same object in view the headlamps are mounted higher up and closer to a gusseted cross rod. Full-crowned fenders, of two-piece construction, with the inner piece extending over the hood sills and the front end of the frame, are similar to those used on the Oakland. The raised panel on top of the radiator does not blend into the hood as formerly, but extends on into the cowl, widening out at the windshield in a wide curve.

The new molding treatment is of the two-beaded type, and is used on the roadster and sport sedan to inclose a bright color panel, starting at the windshield and running the entire length of the body.

Of the three sections of the instrument panel the central one carries a hydrostatic King-Seeley gasoline gage, in addition to the usual instruments, while at either side are placed the switch units, including the coincidental gearshift and ignition lock and the headlight control switch, which latter has a position for switching on the stop light automatically while the car is backing up.

Engine controls are now mounted on the engine instead of on the floor boards, while the starter switch has been removed to the top of the starter motor. Included in the standard equipment on all models are a Trico automatic windshield wiper, a King-Seeley dash gasoline gage, and a rear view mirror. The closed models have a built-in sun visor with nickeled brackets. On the new four-door sedan and the sport sedan (which latter takes the place of the former landau sedan), there are also foot rests and robe rails, while the latter model also is equipped with a front bumper and rear fender guards.

## New "Eight" Introduced by Moon

**A**S a companion line to the 6-72 recently announced, the Moon Motor Car Co. of St. Louis is introducing at the New York Show a new line of eights, in two models, a sedan and a close-coupled sedan at \$2,195. The chassis is equipped with the new Continental 15-S, dual manifold engine, described in *Automotive Industries*, of Dec. 10, 1927.

In appearance the new car is similar to the 6-72. It has a high, nickeled radiator, a cowl surcingle of which the cowl lamps are integral parts, and nickeled headlamps connected by a monogrammed bracket. A cadet-type windshield visor, long, sweeping, full-crowned fenders, and a deep running board apron give the cars a very low appearance. The overall height is 70 in. The new cars will have a wheelbase of 125 in. The tread has been increased from the standard 56 to 58 in., allowing wider seats for passengers.

Semi-elliptic silico-manganese steel springs are used both front and rear. Front springs are 36 by 2 in.; rear springs, 54 by  $2\frac{1}{4}$  in. Foot brakes are Lockheed hydraulic contracting four-wheel brakes, the drums measuring 14 by  $1\frac{3}{4}$  in. The parking brake also is of the contracting type and acts on an 8 by 2 in. drum mounted back of the transmission.

Both front and rear axles are Columbias, the rear axle being of the semi-floating type. Spiral-bevel gears are used, with a ratio of 4.63 to 1. Both drive

and torque are taken through the rear springs.

A Borg & Beck single-plate, 10-in. clutch with a fabric insert is employed, the engine, clutch and Warner gear transmission being mounted in a unit and supported on the frame at four points.

Both the starter and the generator are Delco-Remy, the generator being driven by chain. A U.S.L. battery is carried. The ignition switch, of the push-pull type, is mounted at the center of the steering wheel. John W. Brown twin-beam, 21-c.p., double-contact headlamps are standard equipment. A rear traffic signal is supplied and a separate switch under the instrument board controls the indirect lighting of the instrument panel.

A Ross cam-and-lever steering system with a ratio of 15 to 1 is used. The steering wheel is 18 in. in diameter, of hard rubber composition, and has a thin, ribbed grip. The spider is of burnished and engraved aluminum. Wood, wire or disk wheels are supplied as standard at the option of the purchaser and are fitted with full balloon tires, 31 x 6.20 in. in size.

Equipment furnished includes a transmission lock, operated in the top of the gearshift lever, an electric gasoline gage, an engine heat indicator, a speedometer, an automatic windshield wiper, a rear-view mirror, a rear traffic signal, an air cleaner, an oil purifier and a cooling system thermostat.

# 100 Hp. Straight-Eight at \$1,985 Added by Studebaker

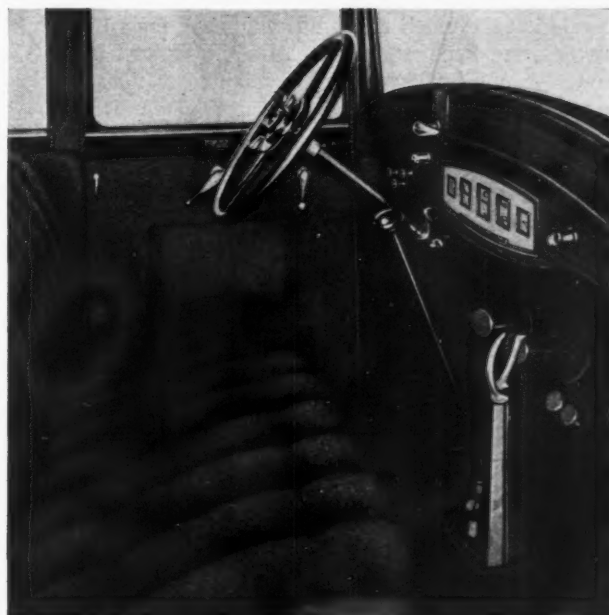
New "President" model has engine of short-stroke type with piston displacement of 313 cu. in. and compression ratio of 4.9. Frame unusually rigid. Four body models in the line.

HIGH performance, attractive, comfortable bodies, good riding qualities and low prices are the major characteristics of Studebaker's new straight-eight, the "President." There are four body models in the new line. The standard five and seven-passenger sedans list at \$1,985, while the other models, which are de luxe editions of the standard sedans, being equipped with six wood wheels and tires, fender wells, etc., list at \$2,250.

Bodies are gracefully stream-lined, with curved rear quarters, double belt moldings inclosing a contrasting color panel, full crowned fenders (beaded along the edge), a high radiator, and cheat line treatment both at the side, bottom and in the roof construction. Interiors are in keeping, with deep upholstery, an attractive new idea in instrument panel layout, instruments being under graduated rectangular frames, arm rests, assist cords and draw shades in rear quarters, and side wall lining cord-trimmed.

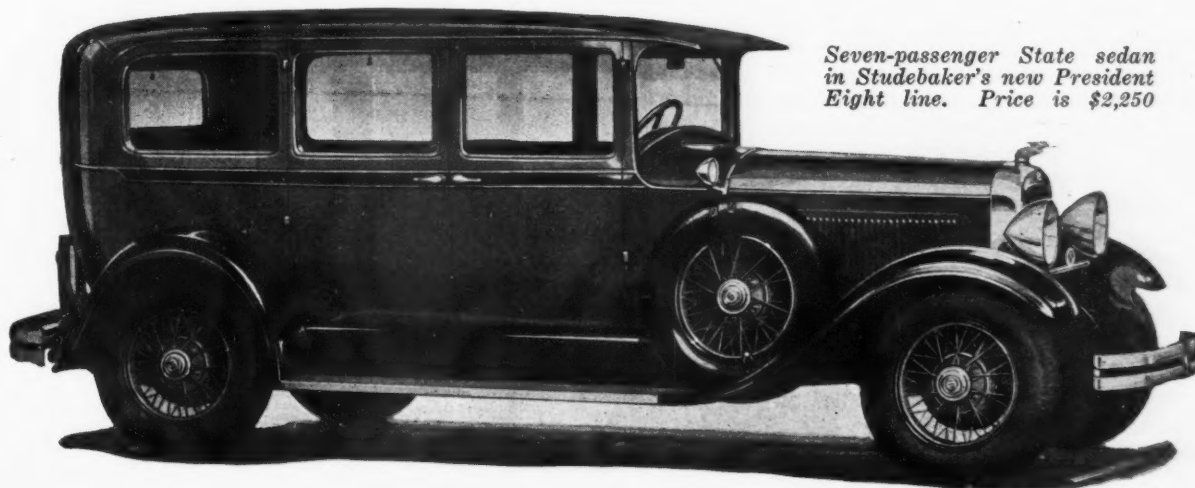
The engine is of the short-stroke type, of high horsepower; transmissions are conventional and in unit with the engine; the clutch incorporates the Long Mfg. Co.'s vibration-damping plate; rear axles are semi-floating with relatively low gear ratios, and brakes are of the three-shoe Bendix four-wheel type.

The frame is unusually rigid. Pressed of 5/32-in. steel, the side members are 8 in. deep and have 2½-in. flanges. There are a total of six cross-members, all channel cross-members which are over 5 in. wide being reinforced by plates under the channel opening, giving the members a flanged box-shape section. Four-point engine support also contributes toward frame rigidity. On the center cross-member the reinforcing plates turn into curved channel members at the ends, forming an



*Interiors of the Studebaker President sedans are attractively finished. The instrument panel is of individual design. Note also the separate light furnished to illuminate the coincidental lock on the steering column, and corded side wall trim*

attachment for the cross-members to the lower flange of the side-member. The rear cross-member consists of a wide steel plate serving also as gasoline tank cover. Front and rear spring brackets have bumper mounting



*Seven-passenger State sedan in Studebaker's new President Eight line. Price is \$2,250*



grooves formed in them to facilitate installation.

With cylinder dimensions of  $3\frac{3}{8}$  by  $4\frac{3}{8}$  in., the engine develops a maximum of 100 hp. at 3000 r.p.m. Its piston displacement figures out to 313 cu. in., and the engine speed at 60 m.p.h. is 2800 r.p.m. The crankshaft is  $2\frac{5}{8}$  in. in diameter, and therefore exceedingly rigid, in view of which, and the relatively low engine speed, only five main bearings are used. These bearings, however, are ample in size, additional length being obtained by offsetting the connecting rods. Bearing lengths are  $1\frac{3}{4}$  in. for the front,  $1\frac{9}{16}$  in. for the second and fourth, and  $1\frac{15}{16}$  in. for the third and rear.

Connecting rods have a center-to-center length of 9  $\frac{7}{32}$  in., or more than twice the stroke. Crankpin bearings, babbitted in the steel rod, are  $2\frac{1}{4}$  in. in diameter and  $1\frac{3}{8}$  in. long. Piston pins float in a bronze bushing in the rod and are  $15/16$  in. in diameter. They are located by lock rings butting the pins in the piston. Invar-strut-type aluminum pistons are used, and have four rings, the lower being a  $5/32$  in. ring of the oil control type, while the others are  $\frac{1}{8}$  in. wide.

#### Front End Drive by Gears

Front end drive is by means of gears, the camshaft gear being of Textolite fabric, for quietness, and threaded on the camshaft. Camshafts are supported on six bearings of the babbitt-lined bronzed-backed type, pressed into the case and doweled. These bearings decrease in diameter by  $1/32$  in. steps from front to rear, with lengths (from front to rear) of  $1\frac{17}{32}$ ,  $15/16$ ,  $13/16$ ,  $13/16$ ,  $15/16$  and  $1\frac{1}{2}$  in. Combustion chambers are of the domed type, which, combined with valves at a slight angle, provides good turbulence. The compression ratio is 4.9, and the combustion chambers are fully machined. Inlet valves have head diameters of  $1\frac{5}{8}$  in. and are of nickel steel, while the Silchrome exhaust valves have head diameters of  $1\frac{9}{16}$  in.

Engine lubrication is by force feed to main, connecting rod and camshaft bearings, with spray lubrication to piston pins and cylinder walls. A feature of the oiling system is that, with the exception of one large oil pipe, all passages are drilled holes in the crankcase. An oil filter cleans the oil on its way from the pump to the main bearings, and is provided with a spring-loaded by-pass valve which acts in case of clogging of the filter. According to the Studebaker Corp., the oil needs to be changed only every 2500 miles after the first thousand.

A  $1\frac{1}{2}$ -in. Schebler carburetor of the auxiliary-air-valve-type is used, combined with an AC fuel pump driven from an eccentric on the camshaft. The inlet manifold is of the Swan type, and manual heat control is provided.

Semi-automatic advance is used in the Delco-Remy distributor, there being 25 deg. of manual and 24 deg. of automatic advance. The distributor is mounted above the center of the cylinder head on an extension bracket inclosing the upper end of the accessories drive-shaft. This latter drives the oil pump at its lower end in the crankcase.

The starter and generator also are of Delco-Remy make, with manual shift starter engagement. The cooling system includes a water pump mounted in the cylinder head and forming a unit with the fan, a fin-and-tube-type Long radiator, a four-bladed fan on a ball bearing shaft, driven by a  $\frac{7}{8}$ -in. V-belt which also drives the generator, and a thermostat in the cylinder head water outlet.

Incorporated in the clutch is the new Long plate

having a mechanical torsional-vibration-damping action.

In unit with the engine is the conventional three-speed Warner gear transmission, with a low-speed reduction of 3.24 and an intermediate speed reduction of 1.96.

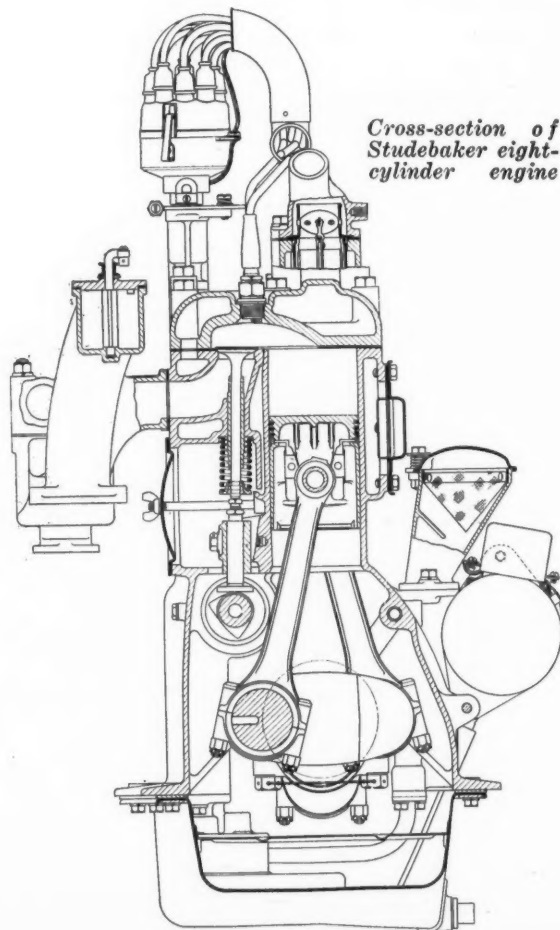
Spicer universal joints are used in combination with a hollow propeller shaft tapering toward both ends. The gear reduction is 4.1 on the five-passenger, and 4.3 on the seven-passenger models, and the rear axle is semi-floating. Timken roller bearings are used both at the wheels and at the differential. Drive is by spiral bevel gear.

Springs are semi-elliptic all around, the fronts being 38 by 2 in. and the rears 60 by  $2\frac{1}{2}$  in., these latter taking both torque and propulsion.

The four-wheel service brakes are of Bendix manufacture, and a separate emergency brake on the transmission is provided. Service brake drums are  $13\frac{5}{8}$  by 2 in., while the transmission brake drum is 8 by 2 in.

Steering is by a Ross cam-and-lever straight ratio (16:1) gear, and Timken roller thrust bearings are used in the steering knuckles. Balloon type 31 by 6.20-in. tires are mounted on 19-in. wood wheels on the standard models, whereas the de luxe or "State" models have six demountable wire wheels.

Body construction is of the composite type, but the front ends are of "clear-vision" all-metal construction. Upholstery is in two-tone broadcloth or mohair, with form-fitting seats having double-deck seat springs. Standard equipment includes a Hershey coincidental steering and ignition lock, draw shades, toggle grips, arm rests, vanity case and smoking set, cigar lighter in rear compartment, footrests, door pockets, double filament headlight bulbs, cowl lights and band, dome and rear corner light, rear traffic signal, automatic

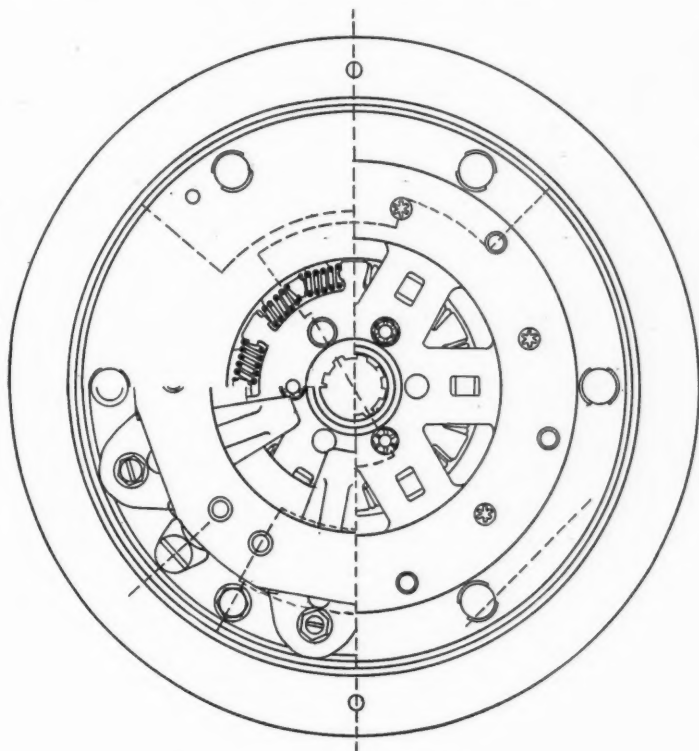


Cross-section of  
Studebaker eight-  
cylinder engine

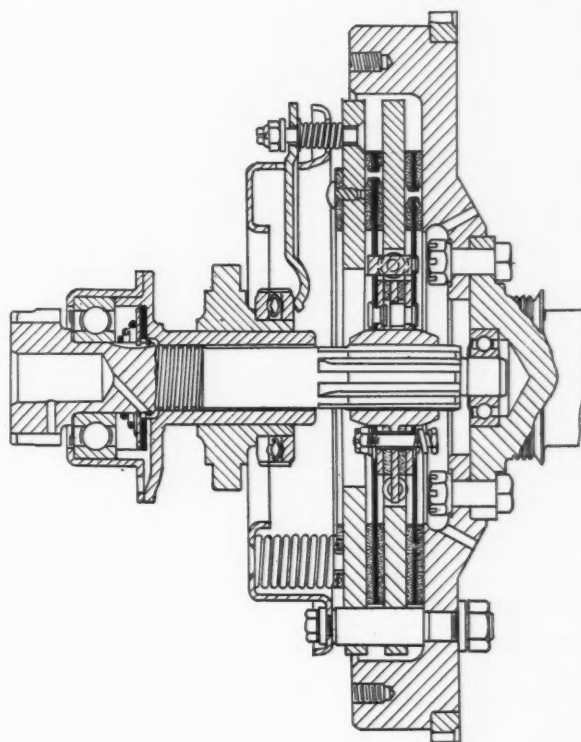


windshield wiper, rear vision mirror, clock, electric dash gasoline gage, dash engine thermometer, trunks on five-passenger and folding racks on seven-passenger

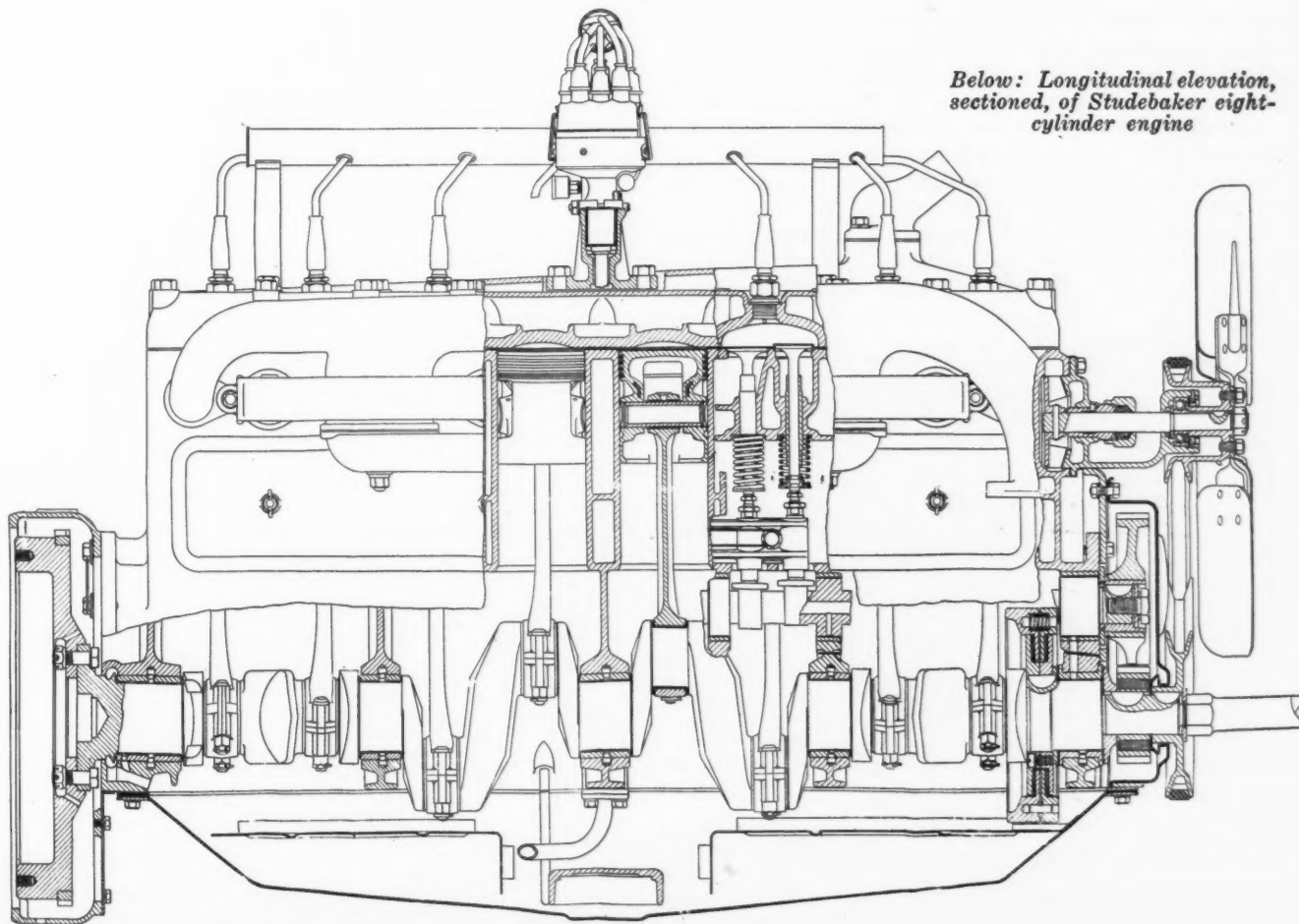
models and Monroe hydraulic shock absorbers front and rear. Bumpers are standard on "State" sedans. All exterior hardware is chrome-plated.

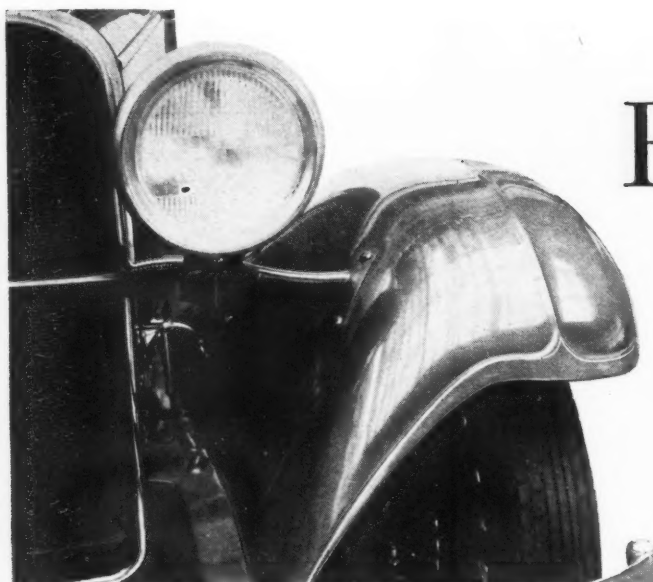


*Above: The new double disk, cushioned and damped Long clutch*



*Below: Longitudinal elevation, sectioned, of Studebaker eight-cylinder engine*





*Front fenders on the new Victory Six are one of the most attractive designs in recent years. They are a one-piece stamping with no seams*

**T**HE new light "Victory Six" of Dodge Brothers, Inc., is ready for the market and will be seen at the New York and Chicago shows. Prices range from \$1,045 to \$1,195, the sedan listing at \$1,095. Of particular interest in the new car, which rounds out the Dodge Brothers line and will be marketed in addition to the four-cylinder and the Senior-Six lines, is the frame and body construction.

Seats are mounted directly on the frame, and the body itself forms merely an inclosure. The top of the frame is covered with sheet metal, which forms the body floor and seat pans, and the seat backs are mounted on the frame. The body is hung from the frame sides, rather than being mounted on top of it. This construction lowers the overall height, besides which it prevents the transmission of torsional strains to the body.

The frame itself is of unusually light stock, 7/64 in., rigidity being secured by using deep side and cross-members. There are three channel-section cross-mem-

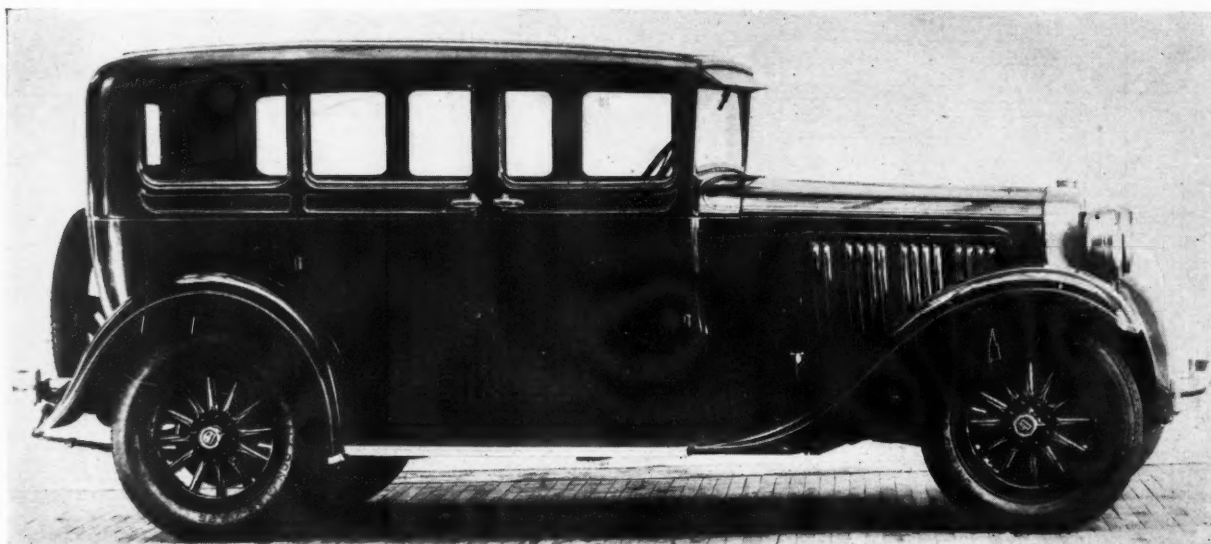
## Body Construction Dodge "Victory

*Seats are mounted directly on frame and body itself forms merely an inclosure for passengers. Short stroke 208 cu. in. engine used. Sedan is \$1,095.*

bers, in addition to a tubular member between the front spring-horns. Side members have a depth of 8 in. at the center, and 1½-in. flanges. The narrowness of the flanges is made possible with this light stock through the use of two steel pans which cover the rear half of the frame and are recessed for leg room.

On the sedans the front seat backs are flanged at the bottom, and bolted to the frame pan below them, the pan being reinforced at the bolt holes with welded-on tapping plates. For the front seat cushion there is a wooden riser mounted on the frame pan, this being practically the only wooden part in the body. With the necessity for frame bracing eliminated, the body is extremely light in construction. On the closed models each body side is die-formed of a single piece, including the frame work around the doors. The rear body panel is also a one-piece stamping, as is the shroud, with which the front body pillars are integral. These units are fastened together by lock-seams, spot-welded. Incidentally, this lock-seam forms a vertical reinforcing rib for the body.

Body sides are box-shaped in cross-section, the inner panels being similar in form to the outer, in one piece for each of the two body sides, and attached to the outer panels by lock-seams, spot-welded. The roof side filler



*Leading the new Dodge Victory Six line is this sedan listing at \$1,095. Its low overall height is obtained without sacrificing head-room*

# is Feature of Six"

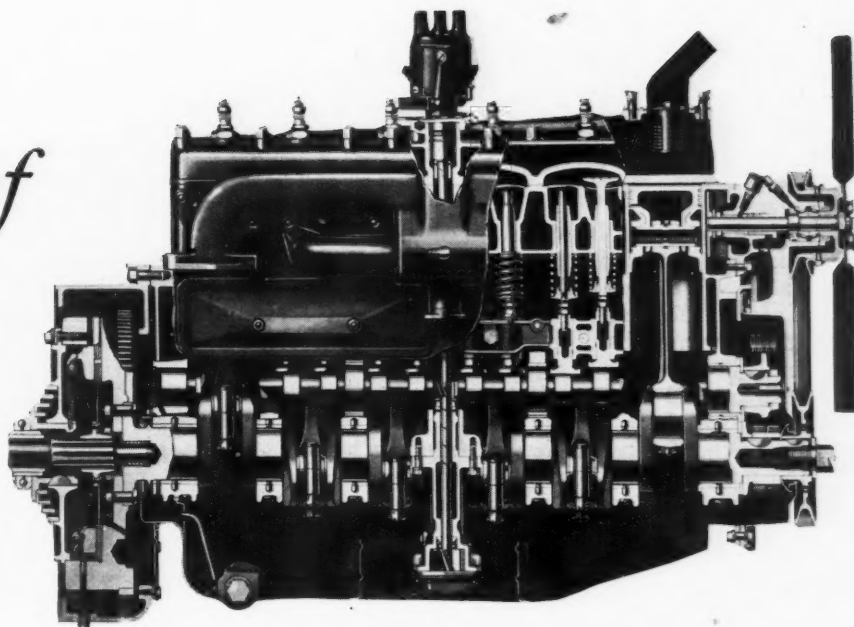
[By A. F. Denham]

is spot-welded to the outer panel, the roof is a separate assembly bolt to the roof frame formed by the body panels, and doors are also formed in two pieces, one inner and one outer panel.

Body side panels are flanged at the bottom, this flange being bolted to the frame. At the front end a bracket is provided through which the front corners are bolted to the top of the frame side members, while at the rear the corners of the body are secured by two vertical bolts each, these passing through the rear seat pan. The only other point at which there is a connection between frame and body is at the front-seat back, where a single bolt serves chiefly to strengthen the seat back by connecting it with the body side pillars, rather than to tie the body and frame together.

In order to strengthen the front of the body, the shroud has been given a channel section. It is formed of a single piece, front corner pillars and the front roof rail being integral with it. A departure in design is also found in the body front, which is of the military type but has a rounded roof edge blending into the coupe-type front pillar extending down the full length of the body. The windshield frame is also rounded at the lower corners.

Simplification in construction was probably also the primary cause for forming the garnish moldings around



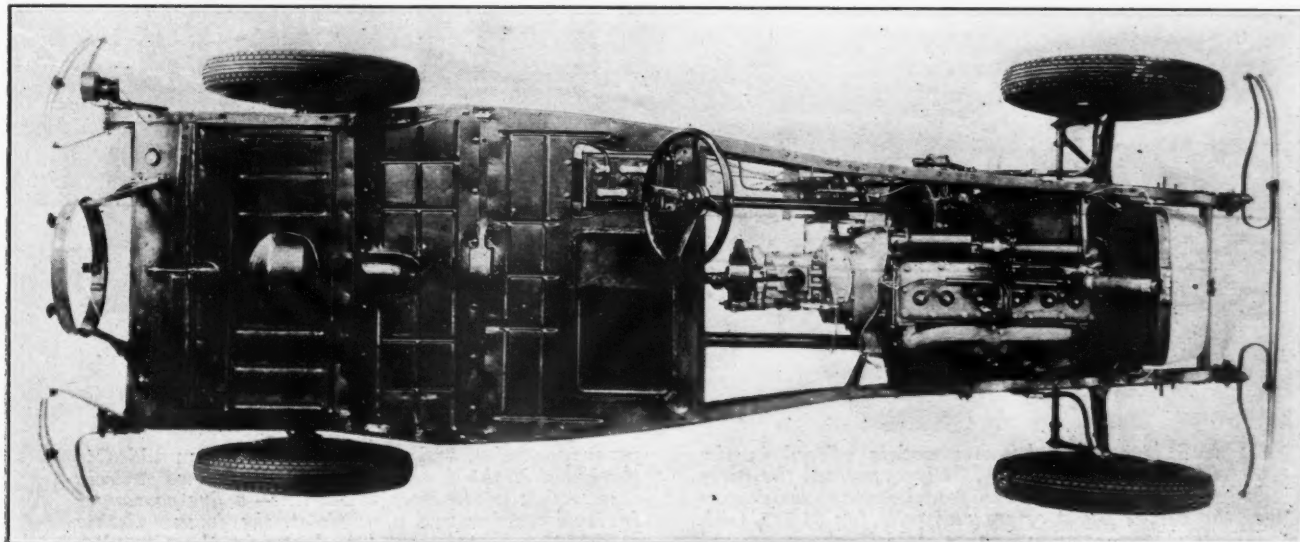
*Sectional view of the Dodge Victory Six engine and clutch. Note thermostat, roller bearing fan hub, and large main bearing areas*

windows as part of the door or side panels. This construction, however, has the added advantage of eliminating visible screw heads, and errors in assembly. Of course, an opening has to be provided at the top of door panels for the introduction of the window glass, the opening being covered by a thin steel plate fastened down with machine screws.

In order to do away with body rumble in this all-steel body,  $\frac{1}{4}$  in. felt padding is pasted under the trim, directly to the body panels. Anti-squeak lining is used also between all metal joints.

A wooden frame and chicken wire are used for the roof assembly. To the wooden frame on all four sides are fastened metal break-over strips extending beyond the frame. The roof covering material is stretched over this strip and fastened to the sides of the wood frame. The entire assembly is dropped into the body top and bolted on, through the wood roof frame and flanges on the roof rail panels.

Aside from the bodies, one of the most striking fea-



*Top view of the Victory Six chassis, showing the very unusual fish-belly frame construction. Note depression in steel frame pans in both front and rear compartments. Seats and backs attach directly to the frame, and body sills are eliminated*



tures is the attractive type of one-piece full crowned fender used. This fender has a bead around the edge and a central bead over the full length, the latter blending into the edging beads at its ends. Running boards attach directly to the frame, without the use of splash shields, the deep frame side members making the latter unnecessary.

In order to improve the general appearance, the hood is made to overlap the front of the cowl by about 9 in. This innovation made it possible to place a roomy body on a chassis of relatively short wheelbase, without giving the car a stubby front appearance.

Other features of body design include a cowl ventilator and swinging type windshield, the latter being fitted with molded rubber weather strips on both sides and the bottom. The radiator shell is fluted at the top, the raised panel being carried on into the hood lines, while the upper central part of the shell curves into a point downwards. Double belt moldings are used on the car, the lower continuing on into the hood. The standard Model A sedan is upholstered in mohair.

In the six-cylinder engine the most interesting feature is its short stroke bore ratio, the cylinder dimensions being  $3\frac{3}{8}$  by  $3\frac{7}{8}$  in., corresponding to a piston displacement of 207.9 cu. in. This permits of the use of larger main bearings in proportion to the piston displacement. The seven main bearings have a total length of 10  $\frac{17}{64}$  in., and with the exception of the front one, which is  $2\frac{1}{4}$  in., all are of  $2\frac{3}{8}$  in. in diameter. The weight of the crankshaft is 52 lb.

In most features the new engine bears a close resemblance to the Senior Six engine. Like the latter, it has a four-bearing camshaft with a projected bearing area of 8.85 sq. in. Cylinders are of the usual L-head type, four-ring Nelson-type aluminum alloy pistons are used, and there is pressure lubrication to main, con-

necting rod and camshaft bearings. Starter engagement is by an Eclipse-Bendix drive, while vacuum fuel feed is used in combination with a 12-gal. tank at the rear of the chassis.

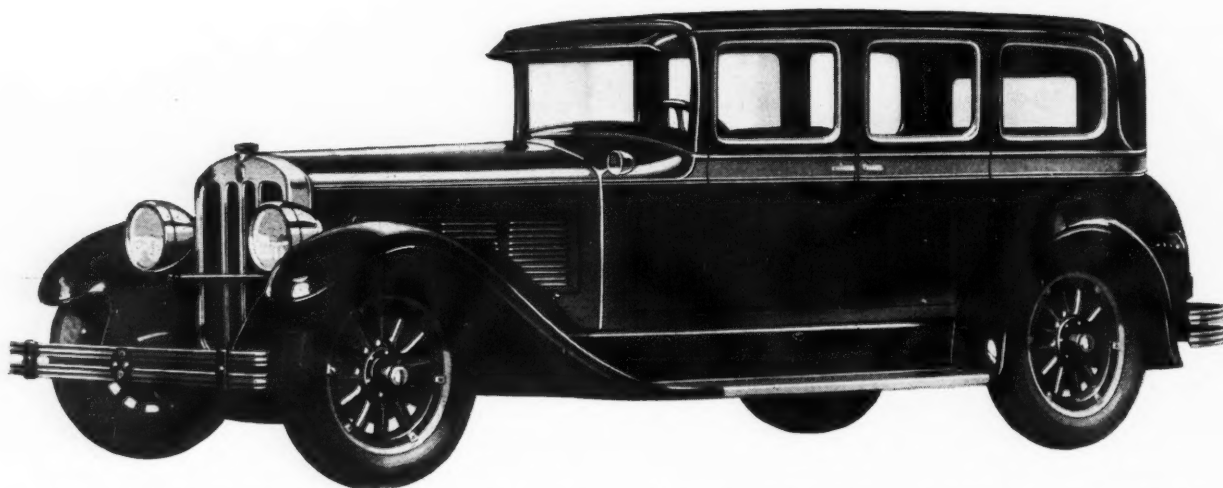
Built in a unit with the engine are the single-plate clutch and the three-speed transmission. The latter is practically identical with that used in the four-cylinder chassis and incorporates such features as roller bearings for the countershaft mounting, a six-splined,  $1\frac{3}{8}$ -in. main shaft mounted on ball bearings, with a roller pilot bearing, and standard shift. The low speed gear ratio is 3.419 and the second speed ratio, 1.705. The propeller shaft is tubular and tapers toward both ends.

The rear axle is also very similar to that used in the Dodge Brothers four-cylinder chassis. It is of the semi-floating type, bevel-gear driven, and has a reduction ratio of 4.454. The pinion shaft is straddle-mounted. Twenty-inch wood wheels, carrying 29 by 5.00-in. balloon tires, are standard. Lockheed hydraulic internal brakes with 12 in. drums,  $1\frac{3}{4}$  in. wide, are fitted, and the system is provided with an automatic refilling device. A separate mechanically-operated emergency brake is provided on the transmission shaft. It has a drum diameter of  $6\frac{1}{4}$  in., and takes  $2\frac{1}{2}$  in. width lining.

Springs are semi-elliptic all around, with lengths of 37 and 54 in. for the front and rear, respectively. Rear springs are underslung. Chassis lubrication is by Zerk fittings. The I-section front axle, which has reverse Elliott ends, has a deep drop at the center. The steering gear is of the worm and sector type with a reduction ratio of 13. Ball type thrust bearings are used on the knuckle pins. Bodies are manufactured by Budd.

The top speed of the car is given as 65 m.p.h. corresponding to an engine speed of around 3300 r.p.m. The car can be turned in a circle of 39 ft. diameter. Its wheelbase is 112 in.

## 1928 Chandler Big Six Metropolitan Sedan



**T**HIS is one of the new models offered in the Chandler line for 1928. It incorporates the same body appointments as are found in the closed cars of the Royal Eight series and sells for \$1,525 with Westinghouse vacuum brakes, which, as announced in last week's issue, are now standard equipment on all Chandler models.

Three new models, a five-passenger sedan, a seven-

passenger sedan and a cabriolet, have been added to the Royal Eight line, and there are also two entirely new models in the Special Six line—a five-passenger Invincible sedan and a cabriolet, the former listing at \$1,065. The lowest-priced car in the Chandler line is the regular Special Six sedan at \$995, while the highest-priced is the Royal Eight seven-passenger sedan at \$2,195.

## Just Among Ourselves

### Ford Meets Direct Price Competition

FORD is nearer to having a direct competitor in price than at any time since the Model T got into production in large quantities. John N. Willys, with the very large price cuts announced on his four-cylinder Whippet, gains the distinction of being the first to try to beard the Ford price lion in its den. However the Willys' move turns out, certainly there has been no more exciting automotive announcement in a good while. Lest too bellicose an interpretation be put upon the Willys move, however, it probably is worth recalling at once Mr. Willys' statement of a week ago that, "It is not the intention of the Willys-Overland to enter into any direct price war with any one or group of manufacturers in the light car field." That Willys-Overland is making a strong bid for a real share in the Ford market is obvious, of course, but even this drastic move probably is not to be visualized as anything quite so dramatic as the opening gun of a price war.

\* \* \*

### Manufacturing Costs Lowered, Says Willys

IT is impossible to refrain from speculating about how successful, from a financial as well as from a sales standpoint, Toledo is likely to be in its challenge to Dearborn. In making such a speculation it is worth while taking into consideration the fact that Willys-Overland, while it has not paid dividends on its stock for many years, still has improved its position from a production efficiency standpoint and from the standpoint of financial stability very steadily in the last five years or so. The price reduction, it is stated, is coming out of "improved manufacturing costs."

That statement in itself is pretty general, but when reinforced by specific statements that opening of a new body-building plant will save \$5,000,000 a year and that completion of a new forge shop last summer has increased efficiency in that department by 100 per cent, the possibilities of the situation grow. And it is only reasonable to believe that John Willys has made this move with a clear idea of being able to better his unit profit as well as increase his production.

\* \* \*

### Competition Should Prove Constructive

WITH Chevrolet prices also down to new low levels, the low priced field bids fair to have a most interesting time of it in 1928. When 1929 rolls around many things will have happened and the picture for the individual companies in that group will be clearer than it is today. The Willys move, however, together with the Chevrolet cut, emphasizes the idea that Ford is unlikely to reach again the high percentage of total output which he formerly enjoyed and that the low-priced market will continue to be shared to an important extent by at least one or two other manufacturers. The competition which has arisen, moreover, will involve many constructive angles, including reduction of waste in merchandising effort, more careful study of marketing methods, even more intensive analysis of production costs and—from the standpoint of the public at large—more and more value for the dollar.

\* \* \*

### The Big Picture as Chrysler Sees It

WHEN parts and accessory manufacturers don't get a reasonable profit on the units they sell to car manufacturers,

it isn't a good thing for the industry; every branch of the industry should be getting fair returns to preserve a healthy condition for all." Walter P. Chrysler expressed this idea when we were talking with him for a moment in New York last week and thus added further important emphasis to the thought that the automotive industry today is comprised of a large number of strongly interdependent units and that its future success lies in the cooperative development of all of its parts. Despite price cuts and internal competition of a strenuous character, the big struggle of the industry is with other industries for a greater share of the consumers' dollar. In visualizing the 1928 outlook from a competitive angle it is well not to let the trees obscure our vision of the woods.

\* \* \*

### Wheelbases Longer Instead of Shorter

DESPITE growing traffic and parking congestion, the movement toward short wheelbase cars doesn't seem to be making much progress here in the United States. A quick look over the 1928 models, as a matter of fact, indicates a definite movement in the other direction on the part of a number of companies. The new Ford, of course, has a longer wheelbase than the old Model T; the 1928 Chevrolet is longer; the new Pontiac and the new Star models also appear with longer wheelbases than their predecessors. In this connection, it is interesting to note that Sir Herbert Austin is on his way to this country to try to arrange for the manufacture in America of the Austin 7 hp. job, a short wheelbase and narrow tread car that has gained some considerable favor in England.—N.G.S.

# New Six With Larger Engine is Introduced by Oldsmobile

1928 car longer and lower and has stronger frame. Powerplant piston displacement 197.5 cu. in. with 5.1 compression.

**N**EW in every respect, the six-cylinder Oldsmobile to be exhibited at New York bears not even a family resemblance to the former line. It is longer and lower, and it has an engine of entirely new design and a much stronger frame. As during the past year, seven body models will be offered, including a sport roadster, a sport touring, a two-passenger coupe, a two-door sedan, a four-door sedan, a Landau-sedan and a rumble seat sport coupe.

The new bodies have individual appearance. Cowls are exceptionally high and long. Bodies, in contrast, are low-hung, with low, long windows and attractive molding treatment, better shown by the accompanying photographs. On the hood a raised panel in contrasting color sweeps back, widening out over the cowl and ending up in a bead curved forward over the sides of the head. The appearance of the radiator is enhanced by the provision of vertical-type manually operated shutters and of a false bottom, giving the unit the appearance of greater height.

Body interiors are attractively finished. The standard equipment includes such items as front bumpers, rear bumperettes, Lovejoy shock absorbers, a hydrostatic dash gasoline gage, a dash engine thermometer and an automatic windshield wiper.

The new engine has a bore of  $3 \frac{3}{16}$  and a stroke of  $4 \frac{1}{8}$  in., giving it a piston displacement of 197.5 cu. in. The bore is larger and the stroke shorter than in the previous Oldsmobile engine, and the displacement is about 7 per cent greater. With a compression ratio of 5 to 1, the engine develops 55 hp. at 2700 r.p.m. Fifth-wheel-speedometer tests of cars on the General Motors Proving Grounds have shown speeds in excess of 70 m.p.h., at which speed the new car is rated.

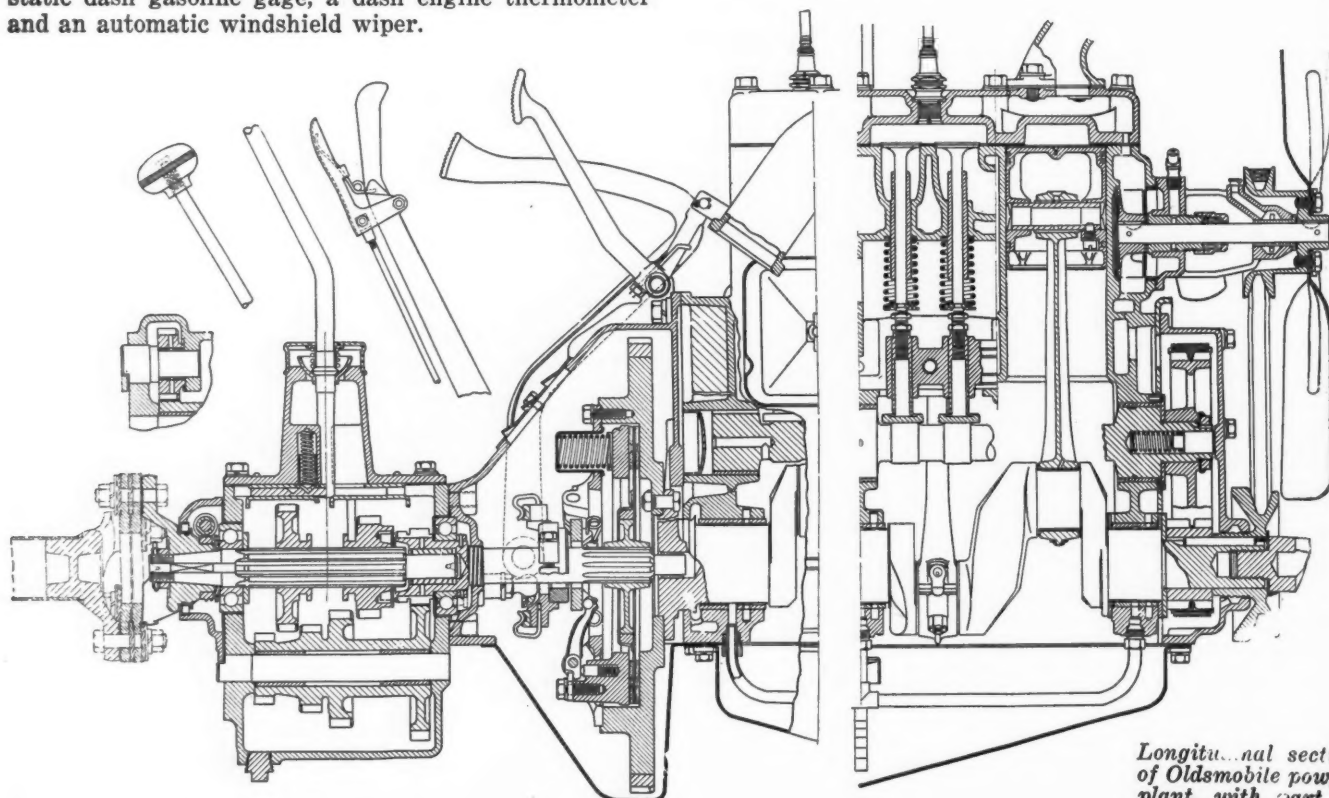
The general design of the engine is conventional, there being a combined cylinder and crankcase block, a pressed steel pan and a detachable cylinder head. The cylinders are of the L-head type.

Four main bearings are used on the crankshaft of the following sizes:

	Front	No. 2	No. 3	Rear
Diameter	2.25	2.3125	2.4375	2.50
Length	$1 \frac{7}{16}$	$1 \frac{9}{16}$	$1 \frac{9}{16}$	$2 \frac{1}{8}$

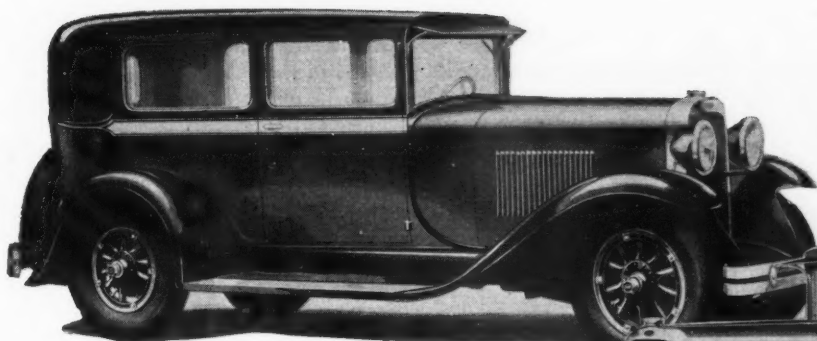
The harmonic balancer used on the former series has been eliminated on the new models, experience on experimental cars having shown it to be non-essential.

While the connecting rods are relatively long (9 in.), a further reduction in their angularity on the explosion

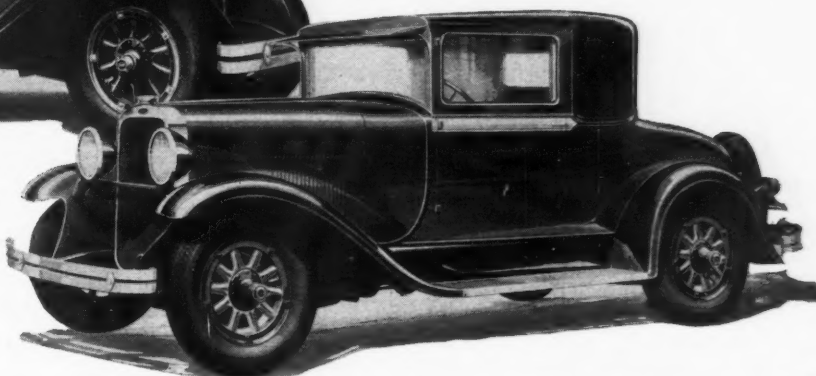


Longitudinal section of Oldsmobile powerplant, with part of the engine omitted





Two attractive models in the new Oldsmobile Six line. Above—The two-door sedan. Right—Two-passenger coupe



ings support the camshaft, these being of the bronze-bushing type and having the following dimensions:

	Front	Second	Third	Rear
Diameter	2 1/4	2 1/2	2 1/16	1 13/16
Length	1 1/2	1 1/2	1 1/2	1 7/16

Camshaft drive is by a Morse chain

stroke is obtained by offsetting the piston pin bosses in the cast iron pistons 3/32 in. Crankpin bearings are 1 7/8 in. in diameter and 1 11/32 in. long, and they are lubricated through the drilled crankshaft. Pistons are fitted with three rings. The weight of the piston and rod assembly is 3 1/2 lb., the rod weighing 1 lb. 14 oz.

Combustion chambers are flat at the top and extend only to just past the center of the piston. No. 1 Silchrome steel is used for the exhaust valve, to adapt the engine to doped fuels. The head diameter is 1 11/32 in. for the exhaust and 1 15/32 for the inlet valves. Valve stems of 11/32 in. diameter are somewhat larger than ordinarily used for this size of valve, the object being to obtain larger bearing areas in valve guides. Conical valve springs are used, which are said to be less prone to valve spring surge.

Tappets have chilled cast-iron heads, and cam contours incorporate the quieting curve developed by General Motors recently. Timing of the engine provides for an overlap of 10 deg., the intake opening at top dead center, and exhaust closing 10 deg. later. Four bear-

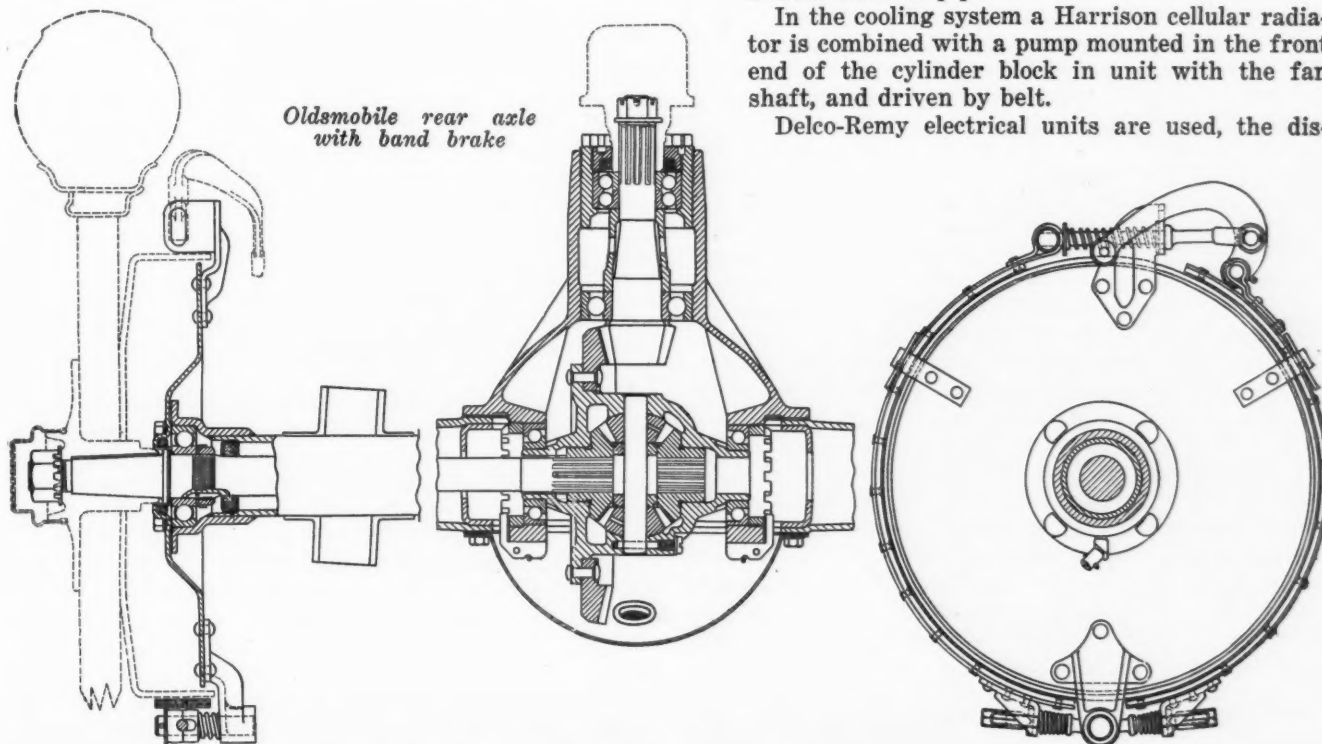
of 1 1/4 in. width, which also drives the generator. An integral gear on the camshaft drives the two-piece vertical accessories shaft. An eccentric on the camshaft also drives the AC fuel pump.

A double precaution against oil contamination is found in the provision of an oil filter and a crankcase ventilating system, part of the air intake to the carburetor being taken from the crankcase. An air cleaner is mounted in such a way as to segregate impurities from the air which comes through the crankcase as well as from that taken directly into the carburetor. With these safeguards the Olds Motor Works recommend oil changes once in every 2000 miles. The oil capacity is seven quarts.

In addition to the air cleaner and fuel pump the fuel system consists of a Schebler air-valve-type 1-in. carburetor. The four port inlet manifold is jacketed and the heating effect is adjustable by means of a self-locking lever on the exhaust manifold. The latter is fitted with a 2-in. exhaust pipe.

In the cooling system a Harrison cellular radiator is combined with a pump mounted in the front end of the cylinder block in unit with the fan shaft, and driven by belt.

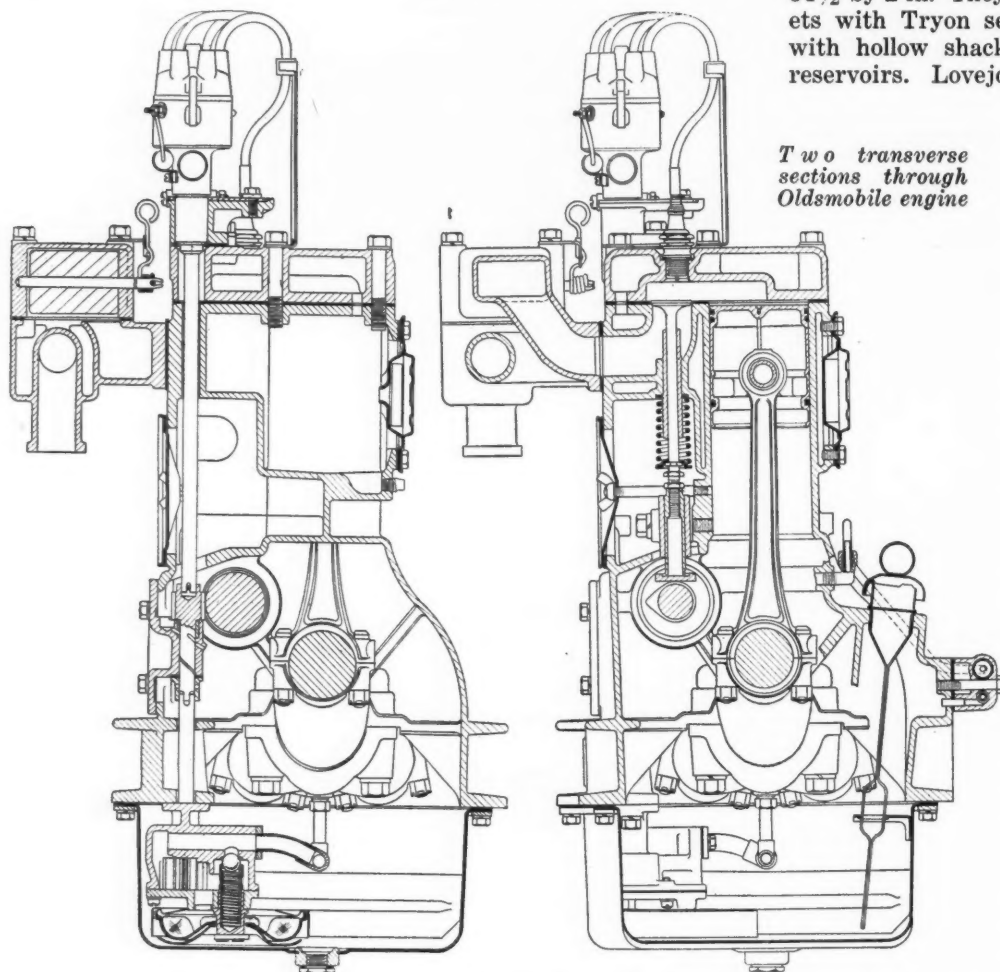
Delco-Remy electrical units are used, the dis-



Oldsmobile rear axle with band brake

tributor being furnished with a dial to enable quick seasonal retiming. Starter engagement is of the manual-shift type, with a switch located on top of the starter. A steel starting gear is pressed onto the fly-wheel rim.

Four-point engine support is used, with rubber "in-



*Two transverse sections through Oldsmobile engine*

sulation," the engine being grounded at the left front supporting arm for the electrical system. Crankcase walls are ribbed on the outside for additional stiffness. A cover over a large hand hole in the water jacket wall, together with other metallic parts with which the cooling water comes in contact, is cadmium-plated to prevent corrosion, while chromium plating is used for the radiator shell as well as all visible exterior hardware.

Metric thread spark plugs are used, and a gap width of 0.025 in. is recommended. These plugs, being more compact, cool better and therefore prevent pre-ignition. The clutch, which is a Borg & Beck of  $8\frac{7}{8}$  in. outside diameter, has a triangular rubber insert disk to prevent crankshaft vibrations from reaching the transmission.

The latter does not differ materially from that used last year, but is slightly heavier. In the propeller shaft assembly two universals are used, the front joint being of the fabric disk type, while the rear unit is a Universal Products sliding metal joint.

Semi-floating rear axle construction is retained, with a banjo-type axle housing provided with a cover plate at the rear. Ball bearings are used throughout this axle, the pinion shaft being mounted on a double-row bearing at the front and a large single row bearing at the rear. The rear axle reduction ratio is 4.81, and the road clearance is 8 in.

Ball thrust bearings are fitted on the steering knuckles. Brake sizes do not differ from last year. Bendix brakes are used in front and external brakes of Oldsmobile design at the rear. The emergency lever operates the rear wheel brakes only.

Springs are semi-elliptic all around, 35 by 2 in. and  $54\frac{1}{2}$  by 2 in. They are connected to the brackets with Tryon self-adjusting metal shackles with hollow shackle bolts forming lubricant reservoirs. Lovejoy shock absorbers, mounted inside the frame side channels, are standard at both front and rear.

Smaller (18-in.) wheels with wide spokes and carrying 28 by 5.25 in. tires on 4-in. rims are standard. Disk wheels are optional on the sport models. A new steering gear is added, of Jacox manufacture and of the worm-and-split-nut type. It has a reduction ratio of 13.81. Drag links have ball and socket joints.

The new frames are exceptionally sturdy for a light six. While the stock size is only  $9\frac{1}{64}$  in., the side member depth is  $5\frac{1}{2}$  in., and top and bottom flanges are  $2\frac{3}{4}$  and 3 in. wide, respectively, the lower flange being rolled over between cross members for added rigidity. There are five cross members, all of channel section. The center cross-member is attached to the side member lower flange by means of gussets ex-

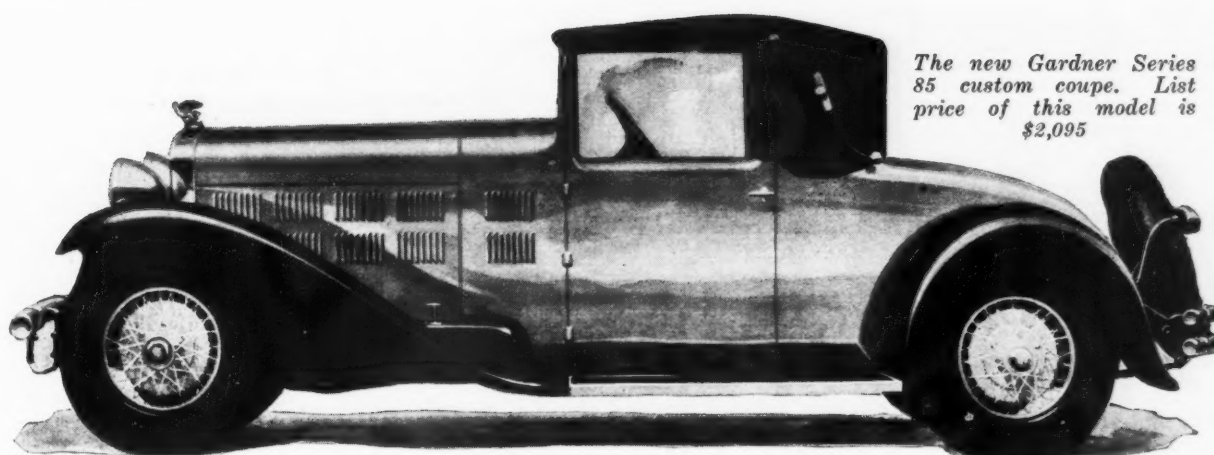
tending down from reinforcing plates under the ends of the former.

Composite construction is retained for the bodies. An interesting feature is the manner in which the front compartment is sealed against drafts. All equipment has been removed from the dashboard proper, and it is merely drilled for the passage of wires and oil gage and thermometer pipes, the latter passing through rubber bushings.

Bodies weigh about 100 lb. more than those of the last series; nevertheless, the top speed is considerably better, and an improvement 20 per cent in gasoline mileage is claimed.

Headlight equipment of the car includes twin-beam, double-filament bulbs, with auxiliary bulbs for parking. A combination tail and stop light is standard, and the instrument panel is indirectly lighted. Mounted on the instrument panel, which is of a new and attractive design, are an electric dash light, a gasoline gage and an engine thermometer. An innovation is found in the dial graduations of the oil pressure gage, which, in addition to the usual scale, has marks indicating the permissible ranges of pressure for driving and idling speeds. Other items of equipment are a rear vision mirror and an ignition lock, located in the coil, which is mounted back of the instrument board. Bumpers are rubber mounted to prevent rattles.





The new Gardner Series 85 custom coupe. List price of this model is \$2,095

## Gardner Increases Engine Power

Models 85 and 95 are fitted with dual carburetors and dual manifold. Clutch and brake pedal assembly redesigned.

THE Gardner Motor Co., Inc., of St. Louis, Mo., will continue its three lines of cars for 1928, with certain changes. Few changes have been made in the Model 75, but the new price of \$1,195 on the roadster is believed to be the lowest at which a straight-eight car has ever been offered to the public.

The Model 85, which replaces Model 80, has a wheelbase of 125 in., which is 3 in. longer than that of the model replaced. Hydraulic internal four-wheel brakes are standard on this as well as on the Model 95, which takes the place of the Model 90. Among the refinements of these cars is a redesign of the clutch and brake pedal assembly to reduce the operating effort required.

More powerful engines are used on both the 85 and 95 models, the increased power being due to the use of dual carburetors, dual manifolds and increased engine speed, and the speeds of the two cars have been increased approximately 10 m.p.h.

T. J. Corcoran Glo-Lite headlamps are used on both of the larger models. These make use of a double filament bi-focal bulb of 21 c.p., combined with a two-beam prismatic lens, with an auxiliary bulb for parking.

All four wheels on both the 85 and 95 are equipped with Lockheed hydraulic brakes, and braking power is divided equally between front and rear. Drum dimensions on the Model 95 are 14 by 2 in. for the service brakes and 8 by 2 in. for the emergency brake on the transmission. On the Model 85 the service brake drum diameter is 12, other dimensions being the same as on the 95. Tire sizes have been changed from 32 by 6.00 to 30 by 6.20 in.

A compound leverage clutch mechanism is now used on both Models 85 and 95. Clutch and brake pedals are mounted on a separate shaft several inches to the rear of the clutch throw-out shaft, the auxiliary pedal shaft being supported by pressed steel brackets from the frame side rail.

Cowl lamps are mounted on a nickel-plated surcingle. Where wire or disk wheels are specified a bracket is provided for carrying the spare at the side of the body. All bodies of the 85 and 95 lines have ash and maple frames which are covered with 20-gage body steel panels.

Upholstery is in various colors of Chase mohair, broadcloth and leather. Various shades of lacquer finishes are available. Form fitting cushions are used.

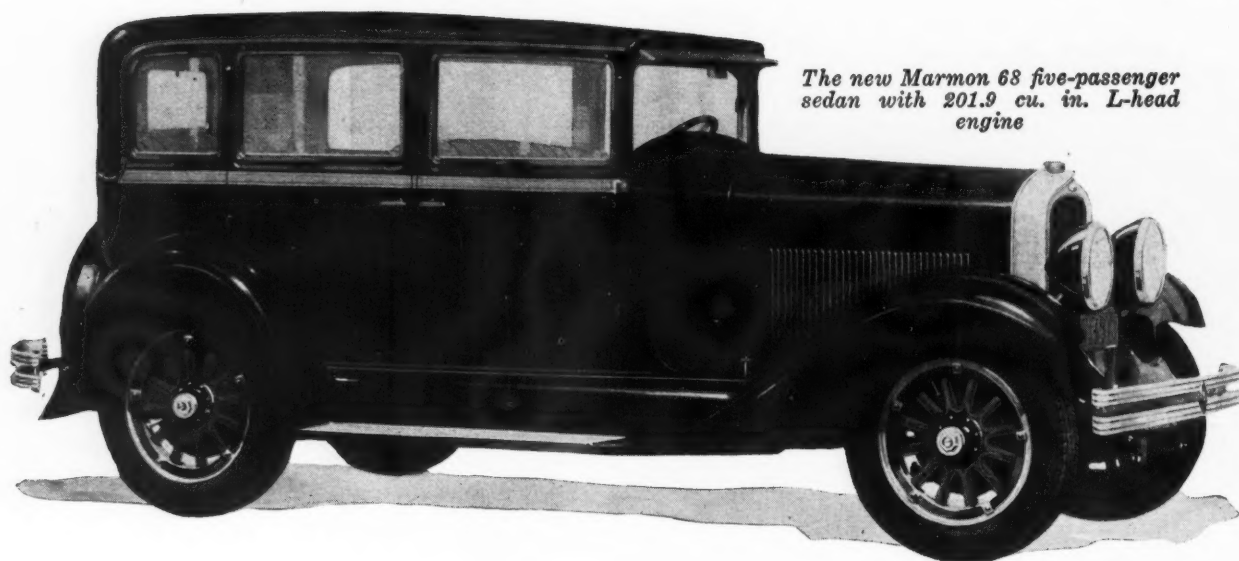
The interiors of Model 85 and 95 bodies will be equipped with Dura hardware, bronze finished. The instrument panel is of spear point design, the Gardner coat of arms furnishing the motif. An inlay molding of the same metal and design is placed in the top of the cowl below the windshield.

The four-door sedan and the four-door brougham are equipped with an automatic windshield wiper, a trunk rack and trunk, a Perfection car heater, a cowl ventilator, an engine heat indicator, an electric gasoline gage, wood wheels (disk and wire optional), a spare wheel where disk or wire wheels are used, front and rear bumpers, a sun visor, radiator shutters, a spot-light, a rear traffic signal, a vanity set, a smoking set, a clock, an ignition lock, Lovejoy shock absorbers on all wheels, a speedometer, spring covers, a gasoline filter, an air cleaner, Fedco theft-proof serial numbers, four-wheel brakes, spare rim, a tire cover and a tire carrier.

The roadster is equipped in the same manner, except for the vanity and smoking sets, and the sun visor is built in the top instead of being a separate unit.

Prices of the Series 95 are as follows: Four-door sedan, \$2,295; four-door brougham, \$2,275; roadster, \$2,085; custom collapsible coupe, \$2,495. Prices of the Series 85 are: Four-door sedan, \$1,895; four-door brougham, \$1,875; roadster, \$1,695; coupe, \$2,095. Series 75 prices are: De luxe sedan, \$1,595; club sedan de luxe, \$1,495; standard sedan, \$1,495; standard club sedan, \$1,395; standard sport coupe, \$1,295; standard victoria coupe, \$1,295, and roadster, \$1,195.





The new Marmon 68 five-passenger sedan with 201.9 cu. in. L-head engine

## Marmon Showing *Lighter* Eight to Sell for \$1,395

Model "68" fitted with L-head engine of 201.9 cu. in. piston displacement which gives 72 hp. at 3200 r.p.m. and has compression ratio of 5.25. Wheelbase 114 in.

By M. Warren Baker

**A** NEW Marmon eight, selling for \$1,395 and known as the "68," follows closely upon the heels of the Marmon "78," announced in December.

By the addition of this second series, Marmon obtains full coverage of the low and medium-priced fields with straight-eight cars. Two new plant units with a combined capacity of 400 cars a day have been placed in operation for the production of the new "68" and "78."

Except for the wheelbase and powerplant, the new "68" follows closely the design of the "78." It has a wheelbase of 114 in. and comes in four body styles: a five-passenger sedan at \$1,395; a four-passenger victoria coupe at \$1,450; a two-passenger coupe at \$1,395, and a two-passenger coupe at \$1,495.

Instead of the familiar overhead valve construction used in previous Marmon lines, the new "68" has an L-head engine, and chief engineer, Thomas J. Little, Jr., has so designed the combustion chamber as to produce high turbulence of the combustible charge. With a compression ratio of 5.25, the engine has been designed particularly for operation with the new anti-knock fuels.

The bore of the engine is  $2\frac{3}{4}$  in., and its stroke,  $4\frac{1}{2}$  in. This gives a piston displacement of 201.9 cu. in., and the engine develops a maximum brake horsepower of 72 at 3200 r.p.m. With this engine an acceleration of from 10 to 50 m.p.h. in 15-16 c. is claimed.

The engine is entirely of Marmon manufacture, even the split-skirt aluminum alloy pistons being cast and machined in the Marmon shops. All cylinders and the crankcase upper half are in one casting. The camshaft

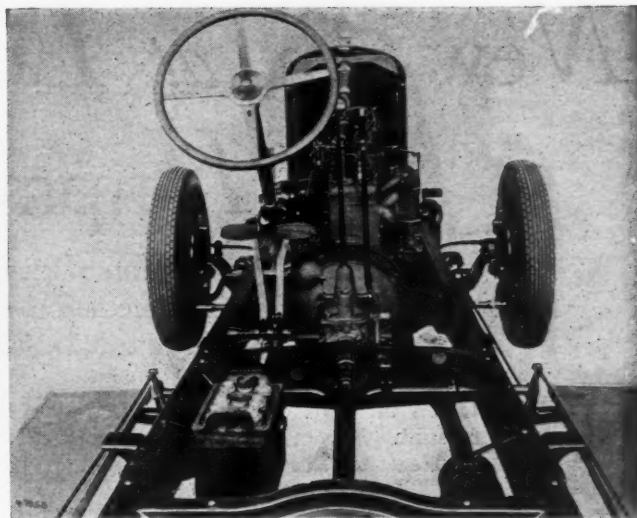
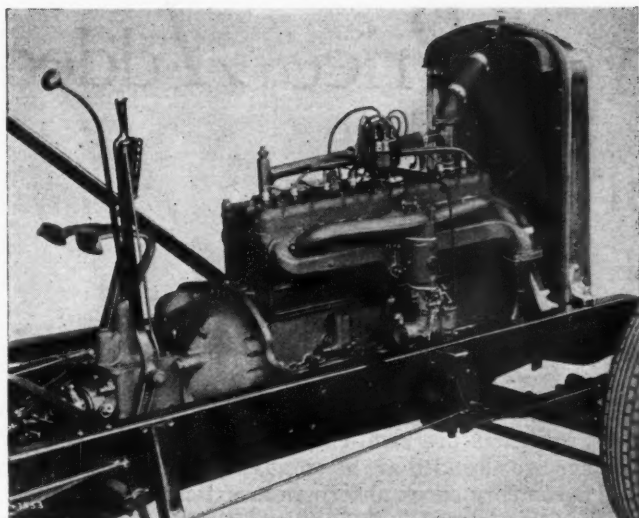
is driven by a Diamond double roller chain with 62 links and a pitch of  $\frac{3}{8}$  in. It is mounted on five bearings with diameters as follows: 2.136, 2.116, 1.125, 2.076 and 1.625 in. (front to rear). Lengths of the camshaft bearings (also front to rear) are  $1\frac{1}{8}$ ,  $\frac{1}{2}$ , 2,  $\frac{1}{2}$  and  $1\frac{1}{4}$  in.

Mushroom-type intake valves are of forged steel, with a nominal head diameter of  $1\frac{15}{32}$  in. a lift of  $\frac{21}{64}$  in. and grooved stem ends. The spring pressure is 70 lb. and the tappet clearance is .006 to .008 in. when hot. Silchrome exhaust valves are used, with a nominal head diameter of  $1\frac{11}{32}$  in.

The crankshaft is mounted in five bronze-backed, babbitt-lined main bearings with a diameter of  $2\frac{1}{8}$  in. Lengths of main bearings (front to rear) are:  $1\frac{5}{8}$ ,  $1\frac{1}{16}$ ,  $1\frac{3}{4}$ ,  $1\frac{1}{16}$  and  $1\frac{3}{4}$  in. The center bearing takes the thrust. End play is limited to .004 in. A torsional vibration damper is employed.

Connecting rods have a center-to-center length of  $8\frac{1}{2}$  in. The rod is split in a plane containing the two bearing axes, and is clamped to the piston pin which floats in the piston. The crank pin diameter is 2 in. Babbitt is poured directly into the lower end of the rod but without spinning. Pistons are  $3\frac{1}{4}$  in. in length and use three rings, a Perfect Circle at top and bottom and a McQuay-Norris in between.

Main bearings, connecting rods and camshaft bearings are lubricated by pressure from the gear oil pump. The timing gear is oiled by nozzle spray. The normal pressure is 40 lb. and crankcase oil capacity is 6 quarts.



Left: Close-up view of front end of new Marmon 68 chassis showing right side of motor. Right: View from rear of Marmon 68 engine mounted on chassis

Gearshift and hand brake levers are placed in a forward position to allow the passenger to enter from the driver's side, or vice versa. A variety of jewel color combinations will be available for all three body styles. All bodies are upholstered in mohair, and silver-finish hardware is employed throughout. The instruments, which are grouped in an engine-turned panel in the center of the instrument board, include a speedometer, an oil pressure gage, an engine heat indicator, an electric gasoline gage, and an ammeter.

The electrical system is a three-unit Delco-Remy, with the generator driven by V-belt from the crankshaft, the same belt driving the fan. The distributor is mounted on top of the engine at the center and is driven direct from the camshaft by gears. The starter is engaged by Bendix pinion. Ignition is semi-automatic. Headlights are controlled by a lever mounted on the steering wheel.

Clutch and transmission are mounted in a unit with the engine, which is supported on the frame at four points. The clutch is a single dry plate type. A Warner transmission is used. Final drive is by a spiral bevel ring gear with 49 teeth, driven by a 10-tooth pinion gear, giving a gear ratio of 4.9 to 1. Both torsion and propulsion are taken through the rear springs. The new "68" is equipped with Bendix mechanical brakes, and both service and hand brake operate on all four wheels.

Narrowing of the frame in front allows a turning radius of only 38 feet. Long semi-elliptic front and rear springs are mounted in rubber shock insulators. Lovejoy hydraulic shock absorbers are placed on all four springs. Front springs are 38 5/16 in. and rear springs 56 3/8 in. long.

One-eighth inch frame stock is pressed into a channel section 6 in. deep, and the frame is braced by a steel plate at the rear, a gusseted channel section in the center, a tubular cross member in the front and the engine arms.

The duplex down draught manifold and Stromberg carburetor of the "78" are used also on the "68," the carburetor having a second fuel jet for high speeds, and an accelerating well.

The large Fedders honeycomb radiator has a water capacity of 4 1/2 gal. The water pump is of the impeller type, driven through the camshaft at the forward end of the cylinder block.

Thermostat control of water circulation is standard.

The minimum road clearance is 7 1/2 in. and tires are 29 x 5.25 in. balloon.

The chassis is lubricated through Alemite-Zerk fittings, and theft-proof Fedco numbers, mounted on the left side of the instrument board, are supplied as standard equipment.

The new "68" cars are equipped at the factory with Lovejoy shock absorbers, a front bumper, rear bumpers, a spare rim, a vacuum type windshield cleaner, side curtains on open cars, remote control door locks and tonneau lights on closed cars, a motor-driven Klaxon horn, a car heater, a cowl ventilator, artillery wheels (disk wheels optional), a sun visor, a rear traffic signal, vanity and smoking sets, and a transmission lock.

## Stearns De Luxe Bodies

**I**NTRODUCTION of a de luxe line of bodies features the 1928 offering of the F. B. Stearns Co. Mounted on wheelbases of 137 and 145 in. respectively, these longer six and eight-cylinder chassis employ the same mechanical units as are used on the standard lines. These models were first exhibited at the Automobile Salon.

Lengthening of the wheelbase naturally necessitated a redesign of the frame, the side rails of which have a box-section at the forward end. This section is produced by riveting two channel sections together at the flanges. Holes are punched in the side of the frame section toward the engine, to facilitate riveting. The reinforcing sections begin about 9 in. back of the front spring pins and extend to about 20 in. back of the rear engine supports. At the rear engine support the side rail is 3 1/2 in. wide, and it narrows down from this point in both directions. Side rails are made of 5/32 in. stock.

Eight cross-members are employed, four of these being tubular and the other four of the channel type, one of them being square in section. A change has been made in the design of the rear spring front bracket, the shackles being now directly under the frame side rail. Bumper mountings are formed integral with the spring horns at both front and rear.



# New "8" at Lower Price Added to Hupmobile Line

Resembles recently announced six in appearance. Wheelbase is 120 in. Engine same as that in Model E-3 and has double intake manifold and a dual carburetor.

**H**UPMOBILE'S latest offering is an entirely new straight eight. The new model is considerably lower in price than the Model E-4 Eight of 125 in. wheelbase.

The car is designated as the Model M-8 and its introduction gives Hupmobile a line consisting of two eights and a six.

In general appearance the new car is similar to the recently announced six-cylinder model. The wheelbase (120 in.) being 6 in. longer than that of the six, body designers enjoyed considerable latitude and were enabled to emphasize various characteristics.

On the engine there is a double intake manifold, in combination with a dual carburetor. Thermostatic control is used for the carburetor, for the water circulation and for operating the radiator shutters. A more efficient oil cleaner inserted between pump and main bearings, an individual crankcase ventilating system, aluminum upper and lower crankcase halves, and pressure oil feed to the piston pins are new characteristics of the engine, which has been developed from that used in the E-4 eight-cylinder series.

## Frame Entirely New

In the clutch is found the new Long plate, which is provided with a mechanical reproduction of the rubberized fabric inserts, which have become popular in clutch design in the past year or so to prevent the transmission of crankshaft vibration to the change gears. The transmission is quite similar in design to that used in the six-cylinder model. Universal Products' universal joints are used, while the rear axle is almost identical with that used in the larger eight-cylinder series. The steering gear is a straight-ratio Ross cam-and-lever type. Frames are entirely new and exception-

ally rigid in design, with a total of seven cross members. Springs are semi-elliptic all around. The front springs are shackled at the front end for easier steering, and Stromberg shock absorbers are standard all around.

Wide use is made of chromium plating. Headlamps, radiator shells, the central part of the headlamp cross-bar, hood hinges, door handles, bumpers, cowl bands and side lamps are all chrome-plated for higher luster and resistance to tarnishing.

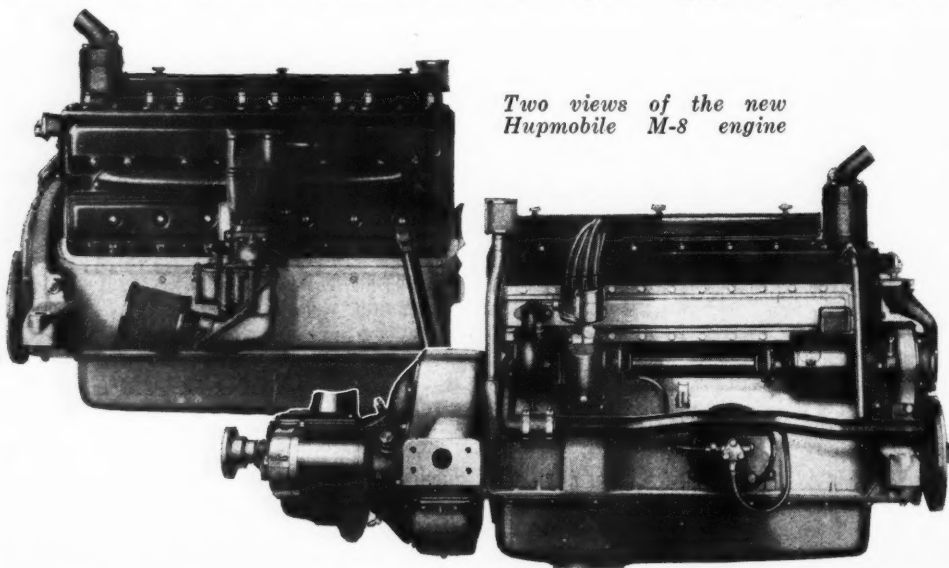
Although the main dimensions of the Hupmobile eight-cylinder engine are retained, considerably more power is developed as a result of the new manifolding and carbureting system, while a low rear axle reduction (4.07 on the roadster, and 4.36 on all other types) gives a higher top speed and tends to prolong the life of the car. At 60 m.p.h. the engine turns over at 2990 r.p.m. instead of at 3100.

## Manual Heat Control

As has been mentioned, the carburetor is of the dual type, with thermostatic accelerating well control. It is of the vertical outlet type, outlet diameters being 1¼ in., and is of Stromberg manufacture. A dash-operated manual heat control is provided, with separate piping from the inlet riser jacket to the exhaust manifold outlet, which is in use when the control is in the full-on position, at which time all exhaust gases pass through the jacket. An Airmaze strainer-type air cleaner is mounted on the carburetor air intake.

Crankcase ventilation is provided chiefly to prevent crankcase corrosion. The air intake is in the flywheel housing. The rotating fly-wheel acts as a centrifugal blower and forces air into the crankcase, which there passes out through the valve chamber and through a pipe extending into the air stream below the engine pan.

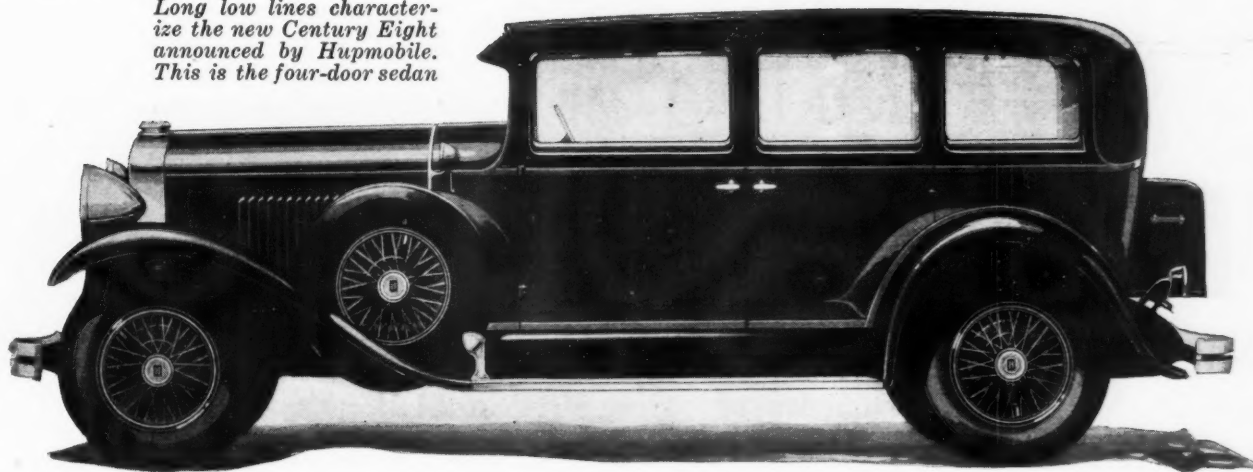
As a further protection against corrosion of piston pins, and also to insure more positive lubrication, connecting rods are now rifle-drilled for pressure feed to the pin bearings, which are now in the rod. Impurities in the oil are taken out by a Handy oil filter included in the line between the pump and the main bearings. The oil filter is provided with a spring-controlled by-pass to prevent stoppage of oil flow in case the cleaner should become clogged, or when the oil is cold. Oil pressure is carried at 20 lb. at 25 m.p.h., which is compar-



Two views of the new  
Hupmobile M-8 engine



*Long low lines characterize the new Century Eight announced by Hupmobile. This is the four-door sedan*



atively low. There is an air cleaner also on the ventilating system air intake.

Other changes in the engine are intended to reduce the rate of wear, the piston pins being  $\frac{1}{8}$  in. larger in diameter and the pistons  $\frac{1}{8}$  in. longer. With pressure oil feed to the pins, these are now locked in the piston. Radiator shutters are thermostatically controlled. The compression ratio has been slightly raised, and in connection therewith metric, racing-type, high-compression spark plugs have been adopted. The electrical equipment further includes a Delco-Remy four-point double-breaker distributor, an Auto-Lite generator, and a starter of the same make. The storage battery is a Willard of 118 amp.-hr. capacity. Double-filament headlight bulbs are furnished.

#### Detroit Gear Transmissions

Transmissions are of Detroit Gear manufacture and have a low speed reduction of 3.11. In the single plate Long clutch, the vibration damping device is of primary interest. Fabric disk inserts in clutches have been widely adopted recently to prevent gear clatter. These, however, are effected by oil and dirt that may get into the clutch housing. In the system developed by Long there are six lugs on the clutch plate and six on the clutch shaft flange, circumferentially arranged. Between each pair of lugs there is a coiled compression spring, which takes care of sudden shocks on the mechanism and of torsional vibration. Between the clutch plate and the shaft flange is inserted a ring of friction lining. The clutch plate itself is attached to the clutch shaft flange by spring-loaded bolts, the bolt hole in the plate being oval in shape to permit of relative motion of plate and clutch shaft under shocks or torsional vibration. The friction lining serves to damp out this relative motion, the entire system being in effect a combination of a flexible drive and a torsional vibration damper.

Knuckle pins are now fitted with Timken roller thrust bearings with very slight taper.

The new frame side rails are of  $\frac{5}{32}$  in. stock, with a depth of 7 in. and  $2\frac{3}{16}$  in. flanges. The lower flange has a turned-down lip for greater rigidity, this lip being carried forward to a point ahead of the front frame cross-member. There are seven cross-members in all, five channel and two tubular. The first channel member, on which the McCord cellular radiator is mounted, no longer carries the engine front supports. This made it possible to reduce its depth at the center, which permitted a lower mounting of the radiator. At the ends, this member increases in depth to that of the frame side rails, the horizontal plate which supports

the engine being riveted to this section. This engine support plate, which is approximately triangular in shape, is also riveted to the lower flange of the frame side member, while a turned-up flange at the rear is riveted to both the web and the top flange of the side member. The long side of this bracket also has a turned-down lip for greater strength.

Engine rear supports also have been strengthened by riveting them to the web as well as to the flanges of the side rails. At the bend in the frame side member for the front axle kick-up there is provided a flange in the form of a channel rib, which is riveted to both flanges and to the web of the side member.

Brakes on the M-8 are of the Hupmobile-Midland Steeldraulic type, a description of which was included in the article on the new Hupmobile six in *Automotive Industries* of Oct. 29, 1927. The same set of brakes is operated also by the emergency hand lever.

Both front and rear springs have widths of 2 in., the front spring being 37 and the rear  $57\frac{1}{4}$  in. long. Nine and eight leaves are used for the front and rear respectively. Wood wheels are standard on the new eight, these being of Kelsey manufacture, but Motor Wheel disk or wire wheels are available at slightly added cost. These wheels are of 19 in. size and carry  $4\frac{1}{2}$  in. rims which take 31 by 6.00 in. balloon tires. Chassis lubrication is Alemite.

Standard equipment on all cars includes Stromberg shock absorbers all around, a Trico automatic windshield wiper, built-in sun visors, a cowl ventilator, a Hall combination stop and tail-light, a National Gage Co. dash engine thermometer, a dash gasoline gage, cowl lights, vanity and smoking sets, and an Electro-lock. The brougham and the custom models are also equipped with trunk racks.

The various engine improvements described above as found on the M-8 have been incorporated also in the larger E-3 eight-cylinder line, which now also has cowl lights mounted on chrome-plated cowl bands, and two side cowl ventilators as standard equipment.

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AN English inventor has patented a single disk clutch in which the levers which multiply the pressure of the single spring are of the form of a cross, each pressing against the pressure plate at two points, at the ends of the cross member. Thus with three levers pressure can be applied to the pressure plate at six equidistant points, and the total pressure will be more uniformly distributed over the surfaces of the friction members than with the ordinary simple levers.

# Lower-Priced "Standard Six" New Willys-Knight Offering

Wheelbase is 109½ in. Engine has same cylinder dimensions as Model 70-A. Bodies are distinctive. Coupe, coach and sedan offered at \$1,145 to \$1,245.

A LOW-PRICED Knight-engined model known as the Willys-Knight Standard Six, with a wheelbase of 109½ in. and capable of 60-65 m.p.h., has been added to the Willys-Overland line for 1928. Five body models are at present available, priced from \$1,145 to \$1,245 as follows:

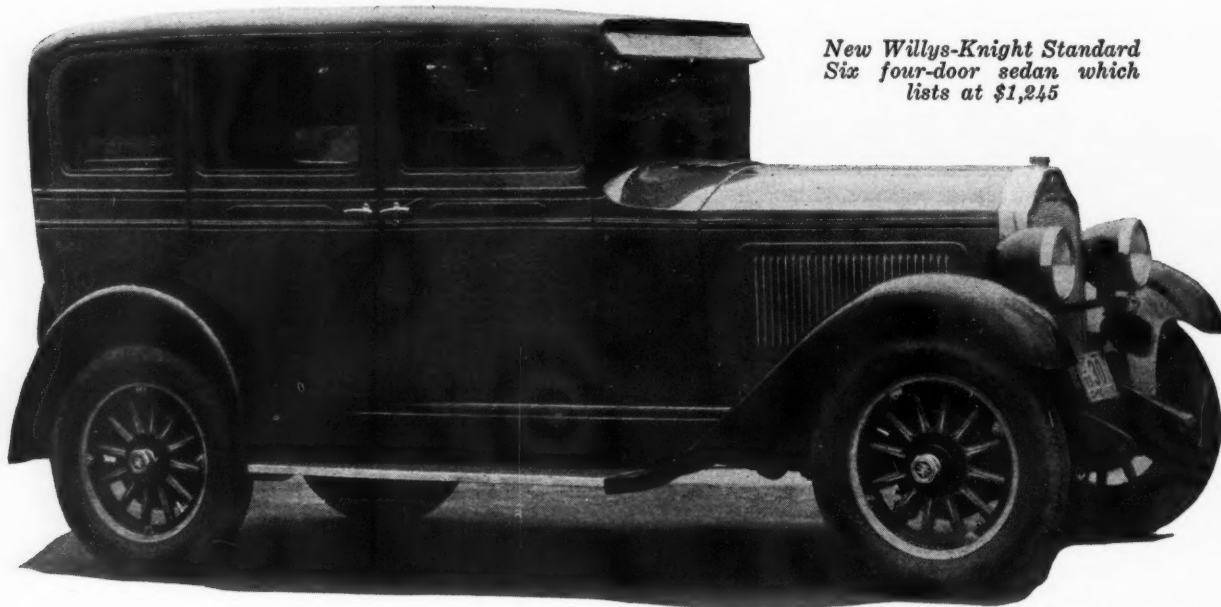
Two-door sedan .....	\$1,145
Four-door sedan .....	1,245
Coupe with rumble seat .....	1,195
Roadster with rumble seat ..	(Not announced)
Touring .....	(Not announced)

The engine, which has a bore of 2 15/16 and a stroke of 3 7/8 in. and develops 45 hp. at 3000 r.p.m., has the same cylinder dimensions of the Willys-Knight

ies have a low-hung appearance, emphasized by long horizontal belt lines.

There are several distinctive features in the body finish. On the doors, for instance, there are raised panels between the belt moldings, lacquered in contrasting colors. Roof line molding is carried down back of the rear window to meet the upper belt molding. Steering wheels have a large center section, which makes them more attractive, in addition to providing greater strength. Horn buttons are formed in a die, with a Knight's head on them.

As in the larger Knight engines, a seven-bearing crankshaft is used, the bearing diameter being 2¼ in., and the bearing lengths 2 in. for the front, 1½ in. for



New Willys-Knight Standard Six four-door sedan which lists at \$1,245

70-A, which is now called the Special Six, while the former 66-A is now known as the Great Six. The piston displacement of the Standard Six engine is 157.6 cu. in. and its compression ratio is 5.5.

Chassis units include a three-speed unit transmission, a Borg & Beck single-plate clutch, Mechanics' Machine Co. universal joints, a semi-floating banjo-type rear axle, an I-beam front axle, four-wheel brakes, with Bendix brakes on the front and external brakes on the rear wheels, Hayes wood wheels taking 29 by 5.50 in. balloon tires, a worm and wheel steering gear, and semi-elliptic front and rear springs.

The characteristic fluting of the radiator shell and hood used on Willys-Knight cars is in evidence in modified form. Fenders are full-crowned, and the bod-

the second, third, fifth and sixth, 2 7/16 in. for the center and 2½ in. for the rear. Thrust is taken by the center bearing, and all are of the bronze-backed, babbitt-lined type.

Nelson type pistons are used, with four 1/8 in. rings, the lower being of the oil control type. Following practice in the larger Knight engines, the eccentric shaft also is mounted in seven bearings. Eccentric shaft drive is by a 1¼-in. width, 3/8 in. pitch chain with automatic adjustment. Both sleeves are of gray iron, timed to open the inlet port at 10 deg. after top center, the exhaust port closing 5 deg. earlier.

Lubrication is by pressure feed to main, crankpin and eccentric shaft bearings, with spray from the crankshaft bearings to the sleeves, pistons and piston pins.



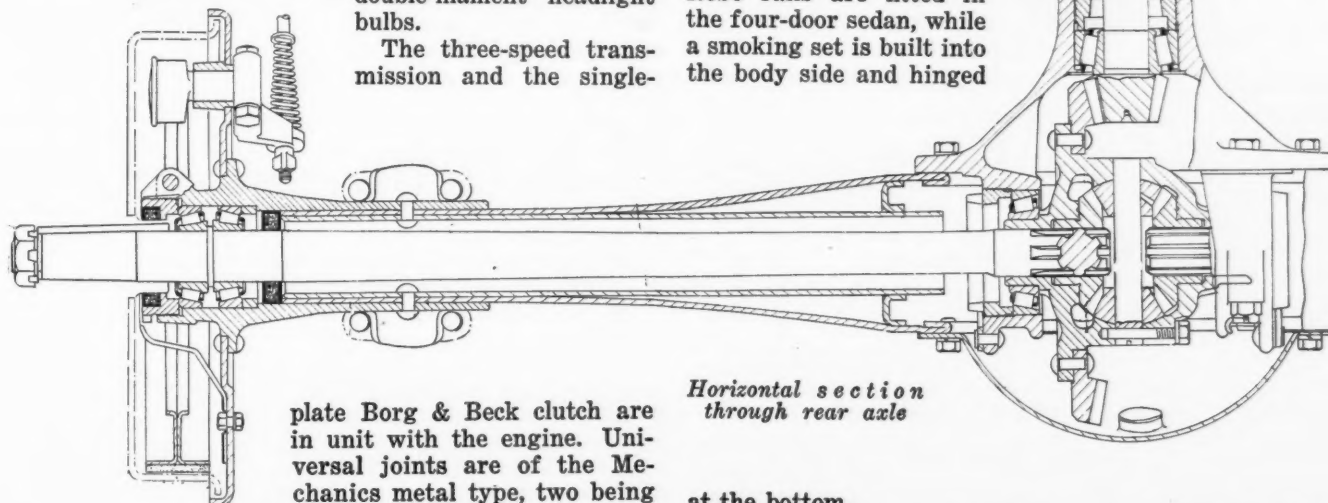
The oil pump is designed to maintain a normal pressure of from 30 to 35 lb. per sq. in. A Skinner oil rectifier is standard equipment. A thermostat is provided in the cooling system, being located in the outlet from the cylinder head.

Included in the fuel system are a Tillotson plain tube type carburetor, a Tillotson air cleaner, a Tillotson fuel filter, a Stewart vacuum tank and a 10-gal. main tank at the rear. The Auto-lite three-unit electrical system has been adopted, the distributor being of the semi-automatic type with both the manual and automatic advance having a range of 20 deg. A 142 amp.-hr. U.S.L. battery is furnished, which is unusually large for this type of car, and the lighting system includes double-filament headlight bulbs.

The three-speed transmission and the single-

filament headlights. The steering wheel is of the three-spoke steel spider and rim type, covered with hard rubber composition.

Remote door controls and concealed piano-type hinges for the tops of the doors are further features of the new line, the bodies for which are now built by Willys-Overland. Upholstery is in a mixture of mohair and velour. Robe rails are fitted in the four-door sedan, while a smoking set is built into the body side and hinged



Horizontal section  
through rear axle

plate Borg & Beck clutch are in unit with the engine. Universal joints are of the Mechanics metal type, two being used. A semi-floating, banjo-

type rear axle has been adopted, with a standard reduction of 5.11.

Front axles are of I-section, with  $6\frac{7}{8}$  in. clearance. Front brakes are of the three-shoe Bendix type, with  $11\frac{7}{8}$ -in. drums. The rear brakes, which are of the contracting type, are similar to those on the Whippet Six, the drum diameter being  $12\frac{3}{8}$  in. The emergency brake lever operates the rear wheel brakes only.

The steering gear is of the worm and wheel type, of Willys manufacture, and has a reduction ratio of  $8\frac{1}{2}$ . Wood wheels carrying 29 by 5.50 in. balloon tires are standard. Springs are semi-elliptic all around, and are  $1\frac{3}{4}$  in. wide, the front ones being  $34\frac{1}{2}$  in. and the rear ones  $51\frac{3}{4}$  in. long. Tryon shackles are used, these shackles being featured by the use of hollow bolts pressed into the spring eyes, and forming a lubricant reservoir. Automatic take-up for wear of the tapered ends of the bolts, which fit into tapered holes in the shackles, is provided by a center assembly bolt which has a compression spring under its head.

Frame channels are made of  $\frac{5}{32}$  in. stock and have  $4\frac{1}{4}$ -in. depth and  $1\frac{3}{4}$ -in. flanges. The front end of the frame is heavily reinforced.

Bodies are of the composite type, the front end being entirely of metallic construction, for clear vision. A one-piece swinging windshield is standard, and a cowl ventilator is furnished.

Included in the standard equipment are a dash gasoline gage, an automatic windshield wiper, a built-in cadet-type sun visor, a rear vision mirror, double filament headlight bulbs, cadet-type sun visor on closed cars, adjustable steering column bracket and Watson stabilators on front and Hexdees on rear. On both sides of the instrument panel there are medallions; these can be removed if desired, and replaced by a heat indicator and a clock. A foot switch controls the double-

at the bottom.

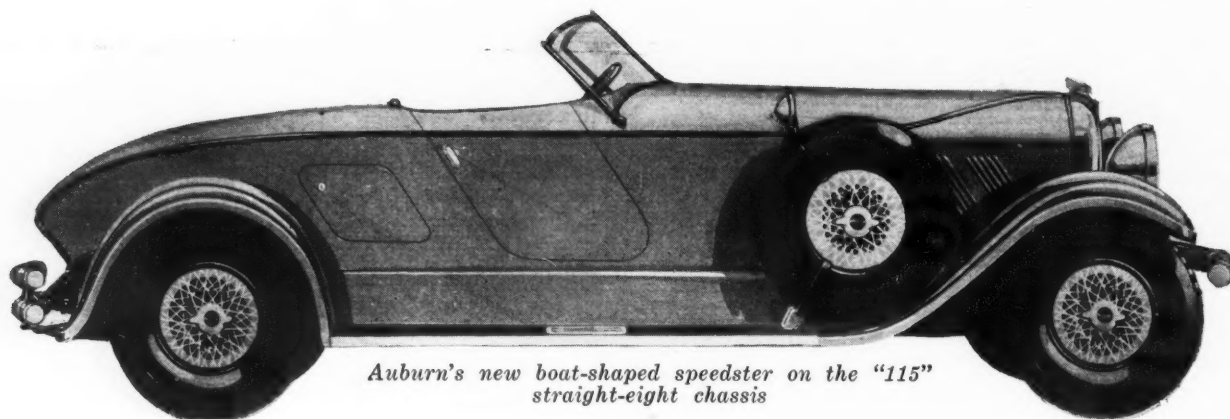
A larger bore engine features the Willys-Knight Great Six to be exhibited at the show. With the bore increased  $\frac{1}{8}$ -in. to  $3\frac{3}{8}$  in., maximum horsepower has been raised from 65 to 75. The new bore corresponds to a rating of 27.34 hp., while piston displacement of the revised engine is 255 cu. in. Coincident with the increased power, a 4.70 to 1 rear axle ratio is employed in place of the previous 5.11 to 1 unit, the effect being to increase the top speed to approximately 70 miles per hour, according to Willys-Overland engineers. Body refinements have also been made, including new design full-crown fenders, provision of three color options on all body models, and the employment of remote door controls, nickel-plated steering column, a new instrument panel with indirect lighting and mounting, a gasoline gage, and Electrolock anti-theft ignition lock.

#### Special Six Changes

Several body refinements have been made in the Willys-Knight Special Six, including the adoption of a gasoline gage and Electrolock as standard equipment. Steering wheels on this model are now of the Husted type, consisting of a hard rubber composition covered steel spider. Mechanical changes on the Special Six include the adoption of 19 in. wheels carrying 31 x 6.00 balloon tires. Springs have been softened to provide easier riding action, and Nelson Bohnalite aluminum pistons are now used. Piston pins are locked in the piston.

Mechanically the four-cylinder Whippet continues unchanged for 1928. Bodies, however, have been redesigned slightly, including the full crown fenders, and adoption of contrasting window reveals and remote door controls. These cars also have cadet type sun visors on the closed models. The Whippet Six is discontinued.





*Auburn's new boat-shaped speedster on the "115" straight-eight chassis*

## Auburn Increases Output of *Big Eight* to 115 Horsepower

Dual manifolding and dual carburetor adopted, compression ratio increased and new method of heat control employed. Two other models redesigned. Frames, bodies independent.

**A**S during the past year, the offering of the Auburn Automobile Co. for 1928 will consist of three chassis models—two eights and a light six. All three models, however, have been redesigned to some extent. Prices have not been announced, but it is not expected they will differ materially from those of 1927.

The eight-cylinder chassis models for 1928 are designated according to horsepower. The big eight, which is said to have the highest powered stock car engine on the domestic market, is called the "115," the smaller eight is called the "88," and the six the "76."

The item of greatest interest probably is the unusually stiff frame which has been adopted for all models. All frames now have a side-member depth of 7 in., and a flange width of 3 in. On the two eights, 3/16 in. stock is used, while the six-cylinder chassis frame is stamped from 5/32 in. stock. On the eights there is a reinforcement channel of 5/32 in. stock, placed inside the main frame channel and extending from back of the rear engine supports to the front spring horns. These changes have increased the weight of the frame about 100 lb., but a like amount has been saved on the bodies, which no longer serve as a reinforcement for the frame.

The channel-type front cross-member below the radiator has been strengthened by widening it and turning a flange downward, and the tubular member between the front spring horns is now heavier.

At the rear ends the frames have also been strengthened transversely, by substituting for the rear cross-member a 5/32 in. wide curved steel pan, bolted to the lower flange at the side member, at the front and rear, and to the upper flange at the center. Further rigidity has been achieved by ribbing the rear motor supports, so as to make the engine itself as rigid a

cross-member as possible. At the front the engine is mounted on rubber washers. A further change on the frame is found in the malleable iron spring eye brackets, which are designed for integral bumper mounting, both front and rear.

Among the changes responsible for the increase in power in the "115" is the adoption of dual manifolding and a dual carburetor with 1 1/4 in. outlets.

A slight increase in compression ratio also has contributed to the increase in engine power, the ratio now being 5.35 to 1, as compared with 5.15. A by-pass type of muffler is fitted on the "115," which at 60 m.p.h. reduces the back pressure by about 4 lb. per sq. in., the increase in power available from this reduction alone increasing the top speed of the car by 3 to 4 m.p.h. The muffler has a central pipe which can be opened from the driver's seat to permit the free passage of exhaust gases through it. That there is but little increase in noise at this speed is evidenced by the fact that it is practically impossible to tell whether the valve is open or shut from inside the car.

### New Heat Control

A new method of heat control is employed on the "115" engine. When the control is in the "on" position, all exhaust gases pass around the vertical riser of the inlet manifold and then forward into the exhaust manifold which is carried down at the front of the engine. With the heat control in the "off" position, only the exhaust from the central part passes around the riser.

A new type of spark plug wire conduit has been developed for the "115." It consists of two nickeled, stamped steel tapered boxes inclosing the spark plug leads, which extend down to the plugs from points directly above them and are provided at the ends with

brass nipples fitting into sleeve type spark plug terminals, the joints being covered by soft rubber cups for protection against moisture. There are two of these spark plug lead inclosures, in front and to the rear of the distributor head respectively, and they are fastened down to the cylinder head by steel rods. A nicked cap also fits over the distributor head and the ends of the flat wire conduits for complete sealing against moisture.

High compression heads with a ratio of 6.25 to 1 are offered as additional equipment on the "115." They are designed to permit of the use of anti-knock fuels. A very simple crankcase ventilating system has been adopted, a pipe extending from the valve chamber cover down below the hood splash pan into the air stream under the car, producing an ejector effect.

#### Lockheed Brakes

Internal Lockheed hydraulic brakes have been adopted on the "115" as well as on the other chassis models. These braking systems include the automatic refilling tank. On the "115" the drums are 14 in. in diameter and the lining is  $1\frac{3}{4}$  in. wide, a total of  $101\frac{3}{4}$  sq. in. of braking area being provided. The propeller shaft emergency brake is retained.

The variable steering gear has been replaced by a constant ratio (16 to 1) Ross cam and lever gear. This change has been made with a view to making parking easier. A further change in the steering gear is the placing of a cylindrical rubber washer around the column in the supporting bracket, with a view to preventing the transmission of road shocks to the steering wheel. A heavier front axle has been adopted on the "115."

Smaller, 18-in. wheels have been adopted on all models, mounting 30 by 6.20 in. tires on the "115." These wheels are of a new 10-spoke wood type built by Motor Wheel, and are more massive in appearance. The spokes are 2 in. wide and  $1\frac{3}{8}$  in. thick. With a slightly larger hub and a smaller outside diameter, the assembly gives the appearance of great ruggedness.

Many changes are also found in the "115" bodies. Owing to the use of smaller wheels the cars are lower, and they are also more attractive in design, partly due to the narrowing up of the distance between belt line

moldings. Running boards are of all-steel construction with inset scuff plates having holes passing through the running boards. To prevent mud and gravel being thrown up through these holes, flexible baffles are hung below the running boards.

Viewed from the front, the new headlights are striking. These take  $12\frac{1}{2}$ -in. lenses and are probably the largest headlamps in use on any domestic stock car. Other external body changes include the adoption of beading along the edges of the full crown type fenders, and a widening of the upper belt molding, enabling the use of colored window reveals. This molding also curves down at the front pillar to meet the lower molding, enabling the use of different color shades on the top of the cowl.

Interiors of cars have been materially improved in trim and appointments.

With the exception of the levers for spark, throttle and light control, which are located above the steering wheel, all controls are mounted on the instrument panel, including the manifold heat control, the windshield wiper button, the choke, the instrument board light button and the starter control, which latter is in the form of a button. The panel itself has Butler finish and is mounted in a walnut-finish board. Its instruments include an engine thermometer and a hydrostatic gasoline gage, while standard equipment on the "115" also includes ribbed nicked tubular bumpers and bumperettes, a thermostat in the cylinder head, a purolator, a treadle-type accelerator pedal, removable triangular hassocks instead of foot rests, Delco-Remy-Lovejoy shock absorbers front and rear, an Electrolock, a Trico automatic windshield wiper, trunk racks on the sedans, with a trunk on the sport sedan, cowl ventilator, cigar lighter, combination stop and tail-light, and smoking sets on sedans. The Bijur chassis lubrication system is used on all models.

Most of the improvements incorporated in the 130-in. wheelbase Model 115 are found also on the Model 88, which supersedes the former Model 8-77, on a 125-in. wheelbase. The "88" has dual manifolding, dual carburetion, the heavier type of frame already mentioned, and internal hydraulic four-wheel brakes (12-in. drums with  $1\frac{3}{4}$ -in. lining). In this lighter eight the variable ratio cam and lever steering gear is retained.

Of major importance in connection with the six-cylinder Auburn, now called the Model 76, is the adoption of a Lycoming engine. This engine has the same bore and stroke as that used in the former model, viz.:  $2\frac{7}{8}$  by  $4\frac{3}{4}$  in. Pistons, connecting rods and many other parts in this engine are interchangeable with those used on the Model 88 straight-eight, the six now also using duralumin rods and aluminum alloy pistons. The engine has a compression ratio of 5.05 to 1, and has four-point suspension, with rigid rear and rubber cushioned front supports.

In addition to the regular line of body models on all three chassis, there will be exhibited at the shows two new body types on the "88" and "115" chassis. These are a boat type speedster and a sedan phaeton. In the latter model an especially sturdy construction is used for the center body pillar on which is mounted the central pillar for the removable top. The body pillar is in the form of a forging and extends to below the body sills, being attached to the frame for rigidity. This model is equipped with a trunk and a straight one-piece windshield.

The speedster is of distinctly new design, being boat shaped. Doors are set at an angle and are the flush type. Its windshield is also set at an angle.



New 10-spoke wood wheel which is being used  
on the new Auburn models



## Roomier Bodies on Falcon-Knights; Prices Increased \$100

Reinforcing of frame is leading chassis change. Smaller wheels fitted. Invar-strut pistons are adopted. Electric gasoline fumer in carburetor.

**N**EW bodies feature the 1928 line of Falcon Motors Corp., although changes have also been made in the chassis. The new bodies are larger, more substantially built, and their lines and moldings have been improved. The major result is a car which, while unchanged in wheelbase, is much roomier than its predecessor.

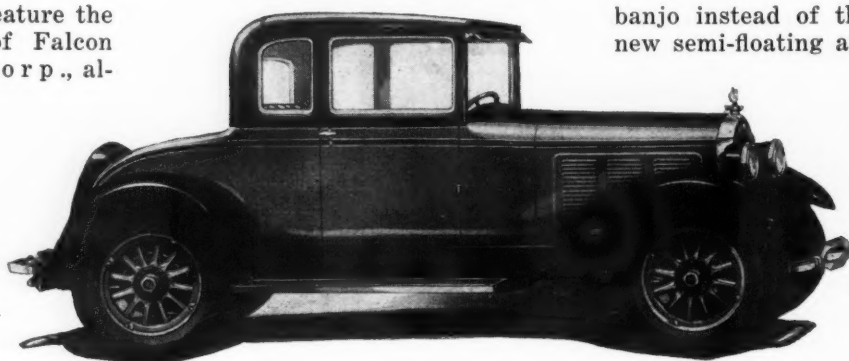
While prices on the complete line have not yet been announced, the two-door sedan will list at \$1,095 and the four-door sedan at \$1,195, both models representing an increase of \$100 over last year's offering. The cars, however, remain the lowest priced on the domestic market using the Knight engine.

The leading chassis change is in the frame, which has been substantially reinforced by gussets and stronger brackets, especially at the front end, to eliminate front end weave. Spring horns are also larger. Spring cambers have been increased slightly to obtain better riding qualities, and rubber block spring stops are used. To offset the slight increase in body height occasioned by this change, 19-in. wheels with 29 by 5.50 in. balloon tires have been adopted as standard, in place of the former 20-in. wheels with 30 by 5.50 in. tires.

### Invar-Strut Pistons

Engine changes include the adoption of Nelson invar-strut pistons (with four rings) and the incorporation of an electric gasoline fumer in the carburetor for quick starting. The oil spray from the crankshaft bearings has been increased for better sleeve and piston lubrication. The ratio of the intermediate gear in the transmission has been changed from 2.03 to 1, to 1.82 to 1, so as to obtain a higher speed in second gear, and making shifting easier. Both hand brake and gear shift levers have been moved forward, largely for the purpose of facilitating entry to the driver's seat from the right side. This necessitated a bend in the brake lever, which, however, is entirely below the floorboards. The gear shift lever has been lengthened.

Rear axles have been redesigned, and are now of the



*Appearance of the Falcon-Knight coupe is improved by new type hood louvres, lower running boards and larger fenders*

banjo instead of the split type. The new semi-floating axles are of the full roller bearing type, with reinforcing tubes. At the outer ends the axle shafts are supported on double taper roller bearings. Characteristics of the new axles are claimed to be a higher safety factor and greater accessibility of the gears.

New spring shackles have been adopted. These have the spring bolts pressed into the spring eyes. The bolts are tapered at the ends and fit into tapered holes in the shackle side fittings. A bolt with a spring under the head, located between the shackle bolts, provides an automatic take-up for wear. The shackle bolts themselves are hollow, forming a lubricant reservoir which is filled through a grease gun connection.

A new method of lubricating the pinion shaft bearings has been developed. Instead of the ring gear throwing oil on the rear pinion shaft bearings, as is usually the case, a trough is provided from which oil is conducted to the front pinion shaft bearing, after which it returns below the two bearings to the gear case. In this manner more positive lubrication is obtained. In conjunction with this system a better oil seal has been developed for the front end of the axle housing. Incidentally, both pinion shaft bearings are now of the taper roller instead of the ball type.

Bendix type internal front and rear wheel brakes are now standard on the Falcon-Knight, these brakes having 12-in. drums. Radiator bracing has been strengthened, the brace rods being heavier and the dash brackets moved further apart. The frame front cross member supporting the radiator has been gusseted, as previously mentioned.

Instrument boards are colored to match the exterior finish, with an oval shaped panel carrying a dash gasoline gage and a Stewart-Warner speedometer besides other instruments. With the double filament bulbs adopted in the headlamps, a foot-operated switch for the two beams is provided. A Husted safety steering wheel is also adopted, these wheels having a steel spider, hard rubber covered. The horn button is in the form of a Falcon-Knight crest in the center of the



wheel, with throttle and spark controls also mounted above the wheel. This wheel is of the four-spoke type.

More substantial in construction, the new bodies have an all-steel front, the cowl, front pillars, instrument board, dash, and front door pillars forming a separate welded sub-assembly. All bodies are now built by Falcon-Knight. Dust shields of greater depth, lowering the running boards, give the cars a low-hung appearance.

Among other new features in the bodies are colored window reveals, remote door controls, concealed piano hinges at the tops of the doors, polished plate glass windows instead of the crystal glass formerly used, military type front construction with adjustable colored glass sun visors, a cowl ventilator adjustable in three positions, narrower metal front pillars and better quality trimming.

Seats and cushions are now upholstered in worsted and mohair mixture, with velour side wall lining. Seats are of the saddle spring type, with higher front seat backs on the four-door, and adjustable single seats on the two-door sedan. Roof decks are covered with pyroxylin fabric. Fenders are now of the full-crown type, of two-piece construction but similar to a single unit fender in appearance. They are also wider than formerly. Running boards are of reinforced steel construction instead of the wood type. There are three sets of horizontal louvres in the hood and the increased height of the radiator has materially improved the ap-

pearance by making for more pleasing hood lines.

Interior dimensions of the cars have been increased, there being 1 in. more headroom, between 1 and 2 in. more legroom in the front compartment, and a 1½ in. increase in width of the front seat. Robe rails and foot rests are standard.

As far as performance goes, there has been no attempt to increase the top speed, which is given as between 60 and 65 m.p.h. Acceleration, however, is somewhat better, due partly to the use of smaller diameter wheels, and probably also to the adoption of Nelson pistons.

Riding qualities have been improved by the addition of rear shock absorbers (only front shock absorbers were standard equipment last year), and by an increase in body weights of 70 to 90 lb.

There is a drop type rear glass in the coupe, and the rear deck lid and panel are removable to permit the insertion of a box for carrying samples when the car is used for commercial purposes. On the rear doors of the four-door sedans there are door pockets; dome lights are provided on the sedan models, while door locks (operated by turning the remote door controls in a reverse direction) and the electric gasoline fumer are furnished on all models.

There will be four body styles in the line, a four-door and a two-door sedan, a coupe and a roadster. The first two are already in production. Coupes will be ready for delivery around February, and roadsters in March.

## Velie Makes Chassis and Body Changes

**A**LARGER engine in the 6-66 line, together with a number of improvements in chassis and bodies in both the 6-66 and the 6-77, will feature the exhibit of the Velie Motors Corp. at the New York show. The 6-66 supersedes the Standard 50 and the 6-77 the Special 60. The engine in the new 6-66 has a bore of 3 3/16 in., 1/16 in. larger than before, and it develops 56 b.h.p. at 2800 r.p.m. A vibration damper is fitted.

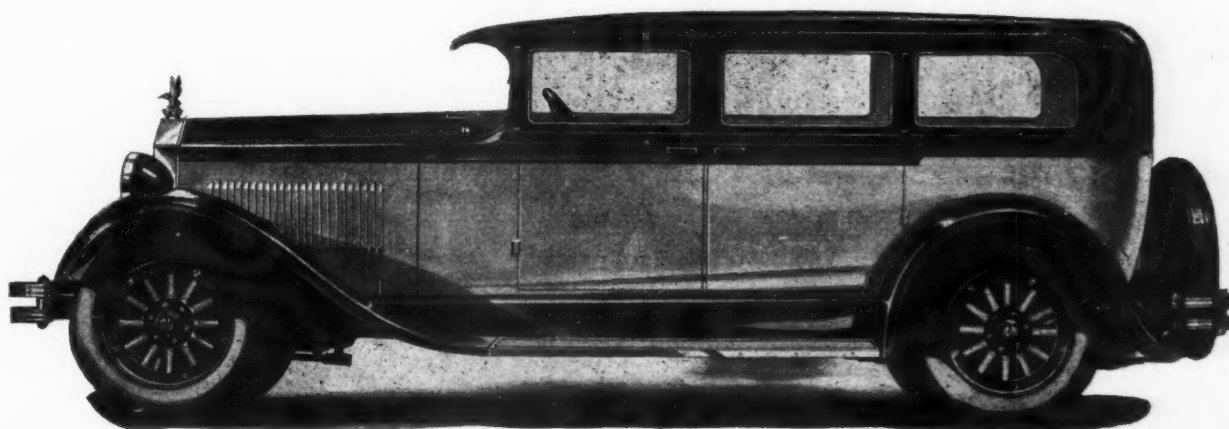
The cylinder head has been redesigned for greater turbulence, and a new Stromberg 1 in. vertical carburetor is employed, in connection with the new manifold, to improve the starting and acceleration.

Front and rear axles have been redesigned. The front axle is now of the reverse Elliott type and equipped with Timken bearings on the knuckle spindles and knuckle pins. Tie rod and steering arms are of the offset type. The rear axle is semi-floating and the rear

wheels are mounted on dual Timken bearings. New automatic compensating internal hydraulic brakes are used on all four wheels, the brake drums being 14 by 1¾ in.

Artillery type wood wheels are standard equipment on the new 6-66, paint and varnish finish being optional. Tires are 30 x 5.25 in. balloons. The fenders of the 6-66 are of one-piece design, with a wider crown to afford better protection to the body and to carry out the general design of the body and hood. A rear gas tank cross member apron gives the car a distinctly finished appearance.

The new Jamestown radiator has a heavier core, greater cooling area, and a wider shell. New form fitting cushions and backs are used. The instrument panel of oxidized silver has been redesigned to include five units, a gasoline gage having been added.



Velie 6-66 sedan, which lists at \$1,265



*Vertical radiator shutters give a higher frontal appearance to the new Hudson. The same effect is used on the Essex models*

## Hudson-Essex Bodies *New, Latter Has Four-Wheel Brakes*

*Radiators on both cars higher, with vertical replacing horizontal shutters. New type steering wheel and anti-theft ignition lock adopted. Two cross-members added to Hudson.*

**B**ODY style changes predominate in the announcement of the Hudson and Essex lines for 1928. Mechanically the cars remain practically unchanged, except for the adoption of Bendix three-shoe internal four-wheel brakes on the Essex models, and of the same type of steering gear as previously used on the Hudson, which is of the worm and roller type. In addition, an Electrolock anti-theft ignition switch has been adopted on the Essex. Mechanical changes on the Hudson are confined to the addition of two tubular cross-members to the frame, one between the front spring horns and one below the radiator.

Five models are included in the Essex line, a coupe, two-door coach, four-door sedan, rumble-seat roadster and sport touring. A more pleasing frontal appearance is obtained by the use of a higher radiator and vertical instead of horizontal radiator shutters. Full-crowned fenders, beaded along the edge, also add to the appearance. These fenders sweep back to a lower running board, the splash pan having been deepened. The running boards are also somewhat wider than formerly.

### Unusually High Belt Line

Characteristic of the new Essex line of bodies is an unusually high belt line, which, with the lower running boards, gives the car a European touch. Windows have been made shallower, giving the appearance of greater length, and roof lines have been made flatter to further emphasize the effect. Belt line moldings sweep down at the front of the body and continue forward on the hood. Front pillars of the closed models are of the clear-vision type, and combine with a military front and built-in sun visor of the cadet type. Two-tone color schemes, with colored window reveals, are used. Coupe roofs are colored to match body tones.

Rear seat widths in the closed models have been increased 2 in., for extra shoulder room. Seats are of the form-fitting type. On the sedan the doors are now 3 in. wider. Door keys also operate the Electrolock on the instrument panel. The finish of the lower windshield panel is in burlled walnut, while the in-

strument board is in polished ebony. The instruments include an engine temperature indicator and a gasoline gage, in addition to the usual speedometer, oil gage and ammeter.

A new type of steering wheel has been adopted. It is of the steel-spider, hard-rubber-covered type. Above the wheels are carried the throttle and headlight control levers (the headlights being of the double filament type). A nicked steering column jacket extends to the instrument board, where the column is mounted in a ball bearing in an adjustable bracket.

While the Essex bodies are still of the composite type, they have been strengthened by the use of metal reinforcing strips and plates at vital points, with malleable fittings between body pillars and steel sills. Doors are now built of three sections of stamped steel. To reduce noise, a silencing pad is fastened to the inside of the cowl, which was found to act as a sounding board. A change has been made also in the rear quarter panels, a single stamping being used for each upper and lower half which extends forward to the windows on both sides.

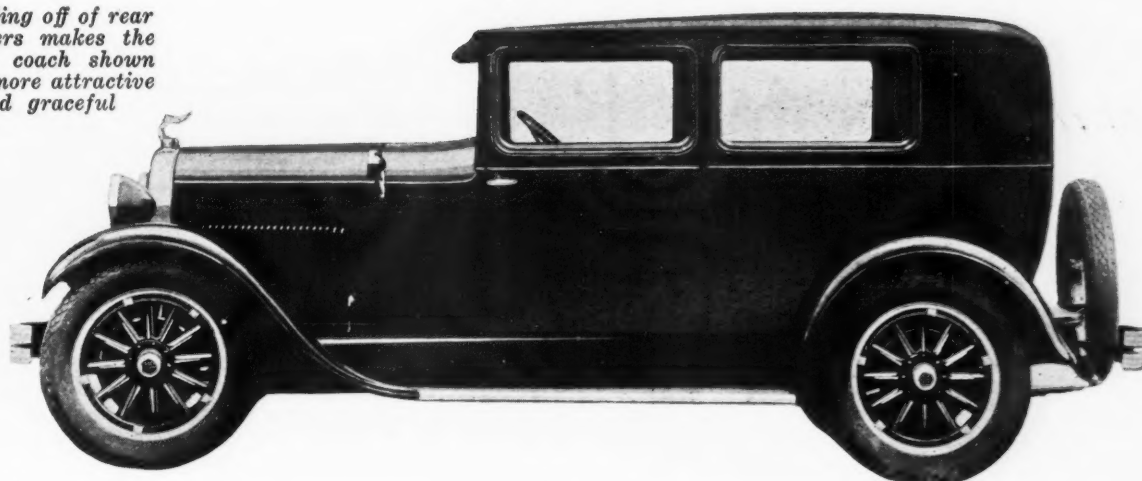
In addition to the equipment already mentioned, there are cowl lights, a radiator ornament, adjustable front seats, an automatic windshield wiper and a rear vision mirror. On the coupe the rear window can be lowered, while the gas tank filler has been moved to the side to permit of mounting standard trunks and racks.

New contours, best shown by the accompanying photographs, are found also on the Hudson models. As formerly, the chassis is made in two wheelbase lengths. On the 127-in. wheelbase chassis there are five models, a standard five-passenger sedan, a seven-passenger phaeton, a victoria, a landau-sedan and a seven-passenger sedan, the last three being called "custom" models. Included in the 118-in. wheelbase line are a coupe, a coach, a sedan and a roadster.

As on the Essex, the radiator is higher and carries an ornamental filler cap. The shutters are now made vertical, to increase the appearance of height in the radiator. One of the characteristics of the new cars



*Rounding off of rear quarters makes the Essex coach shown here more attractive and graceful*



is the low-hung running board combined with deeper splash shield.

Interior fittings include the same new type of steering wheel as on the Essex, a decorative lower windshield panel, and an instrument panel of attractive design, on which are mounted an engine thermometer and a gasoline gage, in addition to the usual instruments, an Electrolock is standard on the Hudson also. A control for the double-filament-bulb headlamps, and throttle and spark levers are mounted above the wheel.

Standard equipment on all models also includes cowl lights mounted on a nicked cowl band. In the custom models specially narrow front body pillars are used, the windshield frames are nicked, and aluminum replaces the sheet steel panels on other Hudson models. Rear quarters in these cars are finished in landau leather. Mohair upholstery is used, and metal interior parts are either nicked or finished in burled walnut. Two smoking sets are standard in each of these models, as are arm rests.

## Franklin Adds Custom and De Luxe Bodies

**T**WO new stock body styles, a group of four custom-built body models ranging in price from \$5,000 to \$7,000, and a line of three de luxe models have been added to the regular "Airman" line of the H. H. Franklin Mfg. Co.

The new stock body models comprise a 4-5 passenger victoria-brougham and a three-passenger coupe with permanent top, priced at \$2,625. The latter may be had with a folding rumble seat at \$130 extra. Both new models retain the characteristic Franklin-De Causse body lines, except that the English boot effect of the rear deck has been eliminated. On the three-passenger model the deck now forms a continuation of the smooth flowing lines of the forward part of the body, while on the 4-5-passenger model there is a large trunk.

The victoria-brougham has a full-width rear seat, which seats three passengers comfortably, while the right front seat folds forward. On the three-passenger coupe, the rear upper quarter is formed of the same material as used for the roof, while the sides are embellished with landau irons. Window reveals on both cars are in contrasting colors. Two color options are available on the new victoria-brougham, while the color scheme on the new coupe is an Ardsley green superstructure with Armory green for the body and wheels, and for the interior finish green broadcloth to match the exterior.

The four custom bodies, which are mounted on the 128-in. chassis, are supplied by three well-known custom body manufacturers: the Willoughby, Dietrich and Holbrook companies. Among the most interesting models of this new line is a custom convertible sedan by Dietrich, listing at \$7,000. The top may be

folded down practically flush with the sides of the car. With the top in this position the convertible sedan offers all the advantages of the open car, yet it can be reformed into a draught-tight and noiseless sedan in a few minutes' time.

Another body by Dietrich is an inclosed drive cabriolet at \$6,400, in which the rear quarter of the top folds in the landau style. This model embodies a glass partition between the permanently covered driver's compartment and the five-passenger rear section, the latter being equipped with cabriolet-type seats folding under the center partition.

The Willoughby body is also a town car, in which the front compartment is equipped with disappearing windows for the doors and the top left open. A quick detachable covering is provided for inclement weather. Landau irons are omitted. Including a set of six wire wheels, the two spares being carried in wells on the front fenders, this model sells at \$5,800.

The remaining custom model is a Holbrook-built sport sedan finished in two-tone gray, with the interior upholstered in a brocaded broadcloth, with plain broadcloth head and side linings. This model is priced at \$5,800.

The three de luxe models comprise a convertible sedan, sport sedan, and special five-passenger sedan. These models, priced at \$3,040, \$3,160 and \$3,225 respectively, follow the general design of the corresponding models in the regular standard line except for special items of equipment like wire wheels, upholstery, color combinations and interior appointments. Hassocks, robes, embroidered with owner's initials and high grade floor rugs are included. The special sedan is priced at \$3,255.

# Durant's Name Reappears on New Line of Sixes

Car will be produced in three sizes at prices ranging from \$795 to \$1,550. Star Four continued with longer wheelbase and more powerful engine.

By P. M. Heldt

**D**URANT MOTORS, INC., has recently completed its program for the year 1928. The Star Four will be continued with only moderate changes. Its wheelbase has been lengthened from 103 to 107 in.; engine output has been increased approximately 16 per cent without change in cylinder dimensions; the engine is now mounted on rubber, and four-wheel brakes of the Bendix three-shoe expanding type are fitted as regular equipment. These brakes act on 11 in. drums and are operated by both the pedal and the emergency lever.

A number of changes have been made also in the bodies, and the general appearance of the car has been improved, notably by increasing the height of the radiator  $1\frac{1}{2}$  in. There are four body styles in the Star line, a two-door sedan, a four-door sedan, a business coupe and a business roadster, both of the latter being upholstered in leather.

In addition to the Star Four there will be three lines of six-cylinder cars, all of which will be sold under the Durant name. They will be known as the Durant 55, the Durant 65 and the Durant 75. All are equipped with engines built by Continental Motors Corp.

The Durant 55 will be turned out in three body styles, a two-door sedan selling at \$795, a coupe at \$795 and a four-door town sedan at \$895.

The Durant 65 line comprises eight body styles, a touring model at \$795, a coupe with rumble seat at \$975, a two-door sedan at \$975, a cabriolet (with collapsible back) at \$1,045, a four-door sedan at \$1,075, a sport roadster with rumble seat and wire wheels at \$1,025 and a four-door town sedan with five wire wheels and five tires at \$1,175. The wheelbase of this car is 110 in.

## Two "75" Body Styles

The Durant 75 line will have only two body styles for the present, a four-door sedan at \$1,385 and a four-door town sedan at \$1,550. This model has a wheelbase of 119 in.

The cylinder dimensions of the engine on the Durant 55 are  $2\frac{3}{4}$  by  $4\frac{3}{4}$  in., which will be recognized as the same as those of the old Star Six, which this model succeeds. The mechanical specifications are much the same all through, except that Bendix four-wheel brakes are fitted, but the bodies are entirely new. The radiator is of the new design, with ornamental vertical and cross bars in front; the hood also is new and the general appearance is entirely changed. This and the Star Four have an amidships transmission, which Durant has

featured for a good many years. The rear axle ratio is 4.87.

It may here be pointed out that all Durant six-cylinder jobs have interchangeable main bearings. All engines, including the Star Four, have Nelson-Bohnalite invar-strut aluminum alloy pistons and all have force feed lubrication to main, connecting rod and camshaft bearings and to the timing chain, which latter on all models is a Morse chain. Tillotson carburetors are used, as is Auto-Lite electrical equipment with Bendix starter drive.

## 185 Cu. In. Engine in "65"

The engine of the Durant 65 has a bore of  $2\frac{7}{8}$  and a stroke of  $4\frac{3}{4}$  in., giving it a piston displacement of 185 cu. in., as compared with 169 cu. in. for the "55." It develops 47 hp. at 2800 r.p.m., and, the same as all other engines, is mounted on rubber. The 65 is a unit powerplant job and has a thermostatically controlled cooling system. Other features of equipment include a gasoline filter and a Hall-Winslow oil filtrator. All oil passes from the pump to the filtrator and thence to the bearings and other working parts. As a result of this complete filtration, it is claimed, the oil needs to be replaced only once every 3000 miles.

Semi-automatic spark advance is provided, the range of manual advance being 10 deg. and that of the automatic advance 15 deg. The lighting equipment includes Glo-Lite double filament bulbs, dimming being effected by switching the current from the filament which gives a horizontal beam to the one giving a downwardly inclined beam. Parking requirements are taken care of by means of extra 3-cp. bulbs in the headlights. The so-called tilting switch is located on the footboard and is foot-operated.

Clutches on the Star and all Durant models are the now familiar Durant single-plate type, comprising a radially corrugated metal disk which is provided with sectors of friction material covering only about one-half of each side of the steel disk, the radial center lines of the sectors being at the crests of the corrugations. The springiness of the corrugated disk helps to insure smooth engagement.

The "65" has a conventional three-speed transmission which is manufactured in the plant of the Durant-controlled Warner Corp., Muncie, Ind. The transmission has a low speed ratio of 3.32, a second speed ratio of 1.77 and a reverse ratio of 4.2. Two metallic universal joints are used and these and the propeller shaft are



of Spicer manufacture. The rear axle is of the semi-floating type, with spiral bevel drive gears giving a reduction ratio of  $4 \frac{4}{9}$  to 1. Tinken bearings are used on the pinion shaft and at the wheels, ball bearings at the differential. Balloon tires of 29 by 5.00 in. are fitted on 19-in. wheels. The front axle has reversed Elliot steering heads. Steering is by a worm and wheel mechanism with a reduction ratio of 11:1. The steering wheel has a diameter of 17 in. On this, as well as on all of the other jobs, the knuckle pins are provided with ball thrust bearings, instead of the thrust washers which heretofore have been conventional in low-priced cars.

All springs are semi-elliptic, the front springs measuring 36 by  $1 \frac{3}{4}$  in. and the rear springs 54 by  $1 \frac{3}{4}$  in. They are attached to the spring brackets and spring horns by Tryon automatically adjusting spring shackles.

All body styles on the "65" chassis are equipped with an automatic windshield wiper, a heat indicator and an electric gasoline gage on the instrument board, and four snubbers. The sport roadster and the town sedan in addition are equipped with both front and rear bumpers and with five wire wheels, the extra wheel carrying a

spare tire and a tire cover.

The engine of the Durant 75 has cylinder dimensions of  $3 \frac{3}{8}$  by  $4 \frac{5}{8}$  in. (248 cu. in.) and develops 70 hp. at the brake at 3000 r.p.m. This engine has a seven-bearing crankshaft, in which respect it differs from the "55" and "65" engine models.

A four-speed, twin-high transmission is used on this car. This was first brought out by Durant for use on a light truck. The transmission, which makes use of internal gears, was illustrated and fully described in *Automotive Industries* at the time. The reduction ratios on the different gears are as follows: high 1:1; third 1.394:1; second 2.409:1; low 4.184:1; reverse 4.184:1. In connection with this transmission a rear axle reduction of  $4 \frac{4}{9}$  to 1 is used.

Two Spicer universal joints and a Spicer propeller shaft are used. The rear axle of this model also is semi-floating, but Timken roller bearings are used all around. Balloon tires, 29 by 5.50 in., are mounted on 19-in. wheels.

The equipment is the same as on the "65," except that the town sedan has wire wheel equipment, front and rear bumpers and Lovejoy shock absorbers all around.

## Liberty Bumper Developed by Roger Angstman Co.

**T**HIS is a new bumper which has been developed by the Roger Angstman Co., of Detroit, and is to be manufactured by the Liggett Spring & Axle Co., of Monongahela, Pa., for original equipment only.

The first feature is the rubber mounting of the main bar on the back structure, as shown in the cross section. This mounting not only prevents rattle at this point, but—what is more important—tends to distribute the strains from collisions, so that such strains are not localized at the point of attachment. Thus, both car frame and bumper structure are relieved. Another interesting feature of this rubber mounting is its absorption of vibration. An overhanging member, such as a bumper will, of necessity, have a period, and it is claimed that by varying the compression to which the rubber is subjected, the period may be varied at will.

The second feature of the Liberty Bumper is the one-piece construction of the main bars. There is a web or reduced section at the middle. This is removed in many instances, but in all cases a portion of the web is left in the center of the bar, so that both top and bottom bars are always in line regardless of how an impact may distort them. At the tire ends the web remains.

Each size and design of bar is a specially rolled mill



Fig. 1—The Liberty rubber-mounted bumper



Fig. 2—View showing details of rubber mounting

section of No. 1095 steel. The ends of the bars may be trimmed to a pattern or formed with eyes as shown. When eyes are used the buttons are added for finish only, no assembly belt being required.

The center web is sufficiently strong to support either a front bar or bumperettes, which obviates the necessity of using assembly clips, if such construction is desired. The back bar structure shown in the illustration is one of many which can be adapted to this type of rubber-insulated bumper mounting.

**I**N his first Cantor lecture on "Alloy Steels, Their Manufacture, Properties and Uses," given at London recently, Prof. H. C. H. Carpenter said it was impossible to state the extent of the world's production of alloy steels, as the United States appeared to be the only country to publish statistics on the subject. These showed that some 2,432,970 tons of alloy steels were manufactured in this country during 1925. The basic open hearth furnace supplied 80 per cent of this total, the acid open hearth furnace 4.4 per cent, the Bessemer process 3.3 per cent, the crucible process 0.3 per cent and the electric furnace 12 per cent. In spite of extensive research, the alloying metals used in the manufacture of special steels were comparatively few in number, the principal metals used being vanadium, chromium, manganese, cobalt, nickel, molybdenum and tungsten. It was interesting to note that the atomic numbers of all these elements with the exception of the last two ranged between 23 and 28.

**I**N a review of electrical progress during 1927, John Liston of the General Electric Co., says there was an increased use of high steam pressures (in electric powerplants), many of the large turbines utilizing steam at pressures up to 600 lb. p. sq. in. There was also a pronounced tendency to utilize higher steam pressure for the industrial type of turbine than had been previously considered practicable.

# AUTOMOTIVE **NEWS SECTION** INDUSTRIES

Philadelphia, Pennsylvania January 7, 1928

## Retail Centers Optimistic as New Sales Season Opens

PHILADELPHIA, Jan. 7—A general note of optimism is sounded from every retail automobile center in the United States as 1928 gets under way. Stocks of new cars are low, much below normal when the barrenness of the Ford dealers is considered, and used car stocks are apparently in good condition.

This condition in the retail field indicates that large volume factory production will be readily absorbed for some time at least. With the new models on display at the New York show, dealers feel that the last of the important influences restraining sales will be swept away and that large volume retail business will get under way early.

Considerable uneasiness as to the effect of the new low-priced cars on the used car market is being expressed, as many dealers believe much of the usual buying of these cars will be turned into buying of new low-priced cars. The slow deliveries of Ford cars in the early part of the year, however, is expected to ease this situation for the time.

Factories resuming after the holidays are getting into production on a moderate basis and shipments to dealers are mainly to meet current sales needs. Large scale operations are sev-

(Continued on page 39)

## Department of Commerce Takes Airplane Census

WASHINGTON, Jan. 5—A world census of airplanes as of Jan. 1 is being taken by the U. S. Department of Commerce, being made, the department announces, with an idea of revealing to American manufacturers of engines and planes, the greatest potential foreign market for American-made planes. In foreign countries the census is being taken by the department's representatives. Altogether the census will cover 70 countries. Military equipment is not being included.

With definite information in hand the department announces it will begin a systematic program for developing such markets. It will be several months before the results of the world survey become available.

## Pratt & Whitney Ship 263

NEW YORK, Jan. 4—Pratt & Whitney Aircraft Corp. shipped 263 aviation engines during 1927, its first production year, which, with spare parts, involved a volume of about \$3,000,000. Orders now on the books, with contracts negotiated or pending, amount to almost \$6,000,000.

## Black & Decker Buys Van Dorn Electric

BALTIMORE, Jan. 3—Black & Decker Mfg. Co., Towson, Md., has acquired the Van Dorn Electric Tool Co., manufacturer of portable electric tools. The bringing together of the two companies will result in a close-knit organization capable of serving the automotive and industrial fields with complete lines of electric tools.

S. Duncan Black, president of Black & Decker, said there would be no changes in personnel or the general activities of the two organizations. The Van Dorn line will continue to be manufactured in the Cleveland plants and will be marketed through the same organization as previously. Likewise there will be no change in the Black & Decker line or distribution.

Franklin Schneider will continue as president of Van Dorn and F. H. Zulauf will be vice-president and general sales manager. Lyman Bellows is sales promotion manager.

## Ver Linden Resigns Peerless Presidency

CLEVELAND, Jan. 5—The resignation of Edward Ver Linden as president of Peerless Motor Car Corp. became known today. Mr. Ver Linden said his resignation followed receipt of a letter signed by seven directors of the company ordering him to make no commitments in the company's name until after a meeting of the board Saturday.

## Tipper Overseas Speaker

NEW YORK, Jan. 4—Harry Tipper, general sales manager of General Motors Export Co., will be the chief speaker at the annual New York show dinner of the Overseas Automotive Club, Inc.

## Rickenbacker Joins Cadillac

DETROIT, Jan. 5—Cadillac Motor Car Co. has announced the appointment of Capt. E. V. Rickenbacker as assistant sales manager, specializing on the La Salle.

## Small Car Makers Nearer on Prices

NEW YORK, Jan. 5—With the announcement of lower prices since Jan. 1 by Chevrolet and Whippet, prices on these lines now compare with Ford's prices as follows:

	Ford	Whip- pet	Chevro- let
Roadster..	\$385	\$485	\$495
Phaeton ..	395	455	495
2-p. coupe	495	535	...
Sp. coupe..	550	545	665
2-d. sedan	495	535	585
Sedan ....	570	585	675
Lan. sedan ...	...	...	715

New Star models with 167 in. wheelbase and four-wheel brakes are priced \$495 for the coach and coupe; \$570 for the sedan, and \$585 for the five-passenger roadster.

## W. O. Rutherford Resigns as Goodrich Sales Head

AKRON, Jan. 4—W. O. Rutherford, vice-president in charge of sales of the B. F. Goodrich Co. since 1917, and a former president of the Rubber Association of America, Inc., has announced his resignation to take effect immediately. He will take a vacation before announcing his future plans. Mr. Rutherford has been with Goodrich for 26 years, coming to the company to do sales work. He was in turn sales representative in Detroit, and in charge of the western district, before being promoted to vice-president.

## Goodrich Elects Directors

NEW YORK, Jan. 4—Directors of the B. F. Goodrich Co. this week elected George M. Moffett, T. G. Graham and S. M. Jett to fill vacancies on the board. No action was taken toward naming a successor for W. O. Rutherford as vice-president. Rights to subscribe for one share of common stock at \$75 for each six shares held as of record Jan. 13 were offered to holders, the rights expiring Feb. 3. Issues will be made from stock now authorized but not issued.

## Oakes-Swenson Formed

INDIANAPOLIS, Jan. 4—The Oakes-Swenson Co. has been organized here to manufacture metal stampings of all kinds, do heat treating work, and design and build dies. James L. Gavin is president; Addison J. Parry, vice-president; Carl G. Swenson, secretary; and Parry Oakes, treasurer. Mr. Swenson will be factory manager.



## Grahams Introduce Five New Chassis

Four Sixes and One Eight  
Comprise Line — Wheel-  
bases Range 110½ to 135

DETROIT, Jan. 4—Five entirely new chassis will be introduced at the New York show under the name Graham-Paige by the Graham-Paige Motors Corp. which is to succeed the former Paige-Detroit Motor Car Co. Four of the chassis are sixes, with wheelbases measuring respectively 110½, 114, 119 and 129 inches, and one is an eight with 135 in. wheelbase.

Of the five chassis, all but the smallest six have four-speed forward transmissions. These transmissions have a standard shift with the lowest speed (which is rarely required except in an emergency) latched out. Operation is virtually as quiet in third as in the direct drive top speed, while the average engine speed is much lower than in most modern chassis. All five chassis have certain features in common.

The new Graham-Paige engines all have full pressure-feed lubrication to crankshaft and camshaft bearings, water pump shaft and valve lifters. All models have guarded fin-and-tube type radiators, North East starting and lighting system, air-cleaners, mechanically operated fuel pumps, two-plate clutches, semi-floating axles hydraulic four-wheel brakes, propeller-shaft parking brakes and long semi-elliptic springs. Cam and lever steering gears with provision for adjusting the wheel to the most comfortable driving position are used on the four largest chassis.

Engines are all of the L-head type and are fitted with light aluminum alloy pistons having invar struts. Engine dimensions are as follows:

Model	Bore inches	Stroke inches	Displace- ment cu. in.
610	2½	4½	175
614	3¼	4½	207
619	3½	5	288
629	3½	5	288
835	3½	4½	299

There are four engine sizes. Three of these are sixes with seven-bearing crankshafts. The eight has five main bearings. All bearings on all models are bronze-back interchangeable type. Drive is by silent chain in all cases. The largest six and the eight are fitted with Lanchester vibration dampeners. Four-point engine support is used in all cases and the mounting is on rubber blocks in all except the smallest six.

Rear axles on the four largest chassis have bevel pinions straddle-mounted on ball bearings. The two smallest chassis have contracting hydraulic brakes operating on 12 in. drums while in the three largest jobs the brakes are of the fully enclosed expanding type operating on 15 in. drums. Wood wheels are standard equipment on all three of the smaller chassis but wire or disk wheels

are available at small extra cost. On the largest six and the eight six disk wheels are regularly furnished with options of wood or wire at slight extra cost.

Radiator casings are high and narrow in the prevailing style and are fitted with the new Graham-Paige emblem which is reproduced in bronze from an original by Lorado Taft.

## Officers and Dealers See New Olds Line

DETROIT, Jan. 5—Ranking officials of General Motors Corp. are in Lansing today for the biggest dealer meeting ever held by Olds Motor Works at the factory. The session is attracting 800 Oldsmobile dealers from the northern central section of the United States to inspect new models which Oldsmobile soon will introduce to the public.

Dealers met at the Gladmere Theater this morning where they saw the new Oldsmobile. At 1 o'clock they were entertained at luncheon in the new warehouse building of the Olds Motor Works while Alfred P. Sloan, Jr., president of General Motors Corp. and his staff, were guests at a big civic luncheon at Hotel Olds. The dealers will be addressed by Mr. Sloan, I. J. Reuter, president of Olds, and D. S. Eddins, general sales manager.

## La Salle Price Changes Apply on Complete Line

DETROIT, Jan. 4—Price reductions ranging from \$10 to \$190 are now effective on the La Salle line. The new and old prices follow:

	New	Old
125"		
2-4-pass. roadster .....	\$2,485	\$2,525
5-pass. phaeton .....	2,485	2,495
4-pass. sport phaeton .....	2,975	2,995
2-4-pass. coupe .....	2,450	2,585
2-4-pass. conv. coupe .....	2,550	2,635
4-pass. victoria .....	2,550	2,635
5-pass. town sedan .....	2,495	2,650
5-pass. sedan .....	2,495	2,685
134"		
7-pass. sedan .....	\$2,775	\$2,795
5-pass. imp. sedan .....	2,775	2,795
7-pass. imp. sedan .....	2,875	2,895

Additions to the line include a two-passenger business coupe at \$2,350; five-passenger family sedan \$2,350; five-passenger coupe \$2,625; five-passenger cabriolet sedan \$2,675, and a seven-passenger family sedan \$2,575.

## Peerless Has New Bodies

CLEVELAND, Jan. 4—Peerless 1928 offering is featured by a new line of bodies on the series 90, which now becomes series 91. Prices range from \$1,895 to \$1,995. Bodies are an innovation for Peerless in that they represent a departure from the conventional, having wide belt and cheat moldings, the former branching into two moldings across the back. Side and rear panels and side roof panels are welded together. Radiators have false bottoms.

## Business in Brief

*A special review by the National Conference of Business Paper Editors and the Associated Business Papers.*

NEW YORK, Jan. 4—Intensive selling and pressure to lower production costs characterized business for 1927, and 1928 will develop along the lines of the year just closed, according to the consensus of 100 editors of trade, industrial and professional journals in answer to a questionnaire sent to them by the National Conference of Business Paper Editors and the Associated Business Papers.

### PUSH COST REDUCTIONS

Editors of papers report increased pressure to reduce production and selling costs, higher specialization in machinery, widespread replacement of obsolete and inefficient machinery, aggressive market finding, reduction in size and intensive development of jobbing areas.

### CONSTRUCTION LOWER

General construction is reported lower due to reduction of residential building, with industrial construction and certain classes of public works building very much increased.

In the automotive industry expenditures for new plants were larger in 1927 than in 1926, due especially to one or two very large construction enterprises and the remodeling of the Ford plant.

### SPECIALIZE MACHINERY

High specialization in machinery to reduce production costs marked several basic industries. Steel mills averaged 75 per cent of capacity in 1927 against 83 per cent in 1926; pig iron capacity 73 per cent in 1927 against 80 per cent in 1926. In metalworking lines the average of work operations was about 15 per cent less than 1926.

### PAYROLLS LOWER

The total payrolls in practically all industries commented upon by these editors were less in 1927 than in 1926. The notable exceptions were in the field of transportation. Railroad payrolls were advanced about \$60,000,000 and those of the companies operating bus lines increased 30 per cent.

### PRICES SLIGHTLY LOWER

Prices throughout 1927 are reported as slightly lower and margin of profit less but the outlook for 1928 is generally considered favorable with some slight price increases.

### STOCK VARIATIONS SMALL

In general the close of 1927 finds the industries of the United States with stocks which deviate from the volume at the close of 1926, reflecting continued hand-to-mouth buying. In the oil fields the total stocks of crude and refined products increased about 12 per cent during this year. Iron and steel stocks are considerably lower than they were a year ago and the unfilled orders of the steel companies are from 12 to 15 per cent below those of the close of 1926. Electrical stocks are low except in electric refrigerators, although total sales of electric refrigerators increased 50 per cent over 1926.

## Machine Tool Trade Sees Prosperous 1928

Tendency Toward Single Purpose Tools Noted—Higher Prices in Offing

MILWAUKEE, Dec. 31—Optimistic sentiments relative to 1928 business prospects are expressed by a majority of the leading manufacturers of machine tools and metalworking equipment of Milwaukee.

W. D. Creider, general manager of the Oilgear Co., maker of broaching machines, presses, machine tool feeds, fluid power transmissions, etc., expresses his belief that 1928 will be a much more prosperous year for the tool industry than 1927.

Mr. Creider points out that there is a growing tendency toward special high production machinery and single purpose tools. He regards it as a quite natural tendency and believes the industry as a whole realizes it and is ready to accept this condition. In a number of cases builders of standard tools have turned their attention to special tools, in some instances giving up the manufacture of their standard lines entirely. Commenting on the unusually large number of inquiries at present, he said: "True, most of our inquiries are for special machines and our engineering department is swamped with them, but we are satisfied that it means greatly increased business for us in the coming year."

E. J. Kearney, of the Kearney & Trecker Corp., maker of milling machines, expressed the view that the volume of orders in 1928 is going to be upward, although this trend may be largely confined to those manufacturers whose designs have kept pace with the demand for greater and greater production.

"Machine tool builders are coming more and more to appreciate the importance of their industry and of the necessity of maintaining it in a prosperous condition," said Mr. Kearney. "This means better prices, compensation for special engineering work, and for extra service not included in the price of the machine."

### Prices Depend on Volume

R. J. Wilson, president of the Kemp-smith Mfg. Co., also making milling machines, expressed the view that prices on machine tools probably will increase immediately after the turn of the year, because the lessened volume has made it almost impossible for machine tool companies to make a net profit on their present volume.

"The fact that Ford has again gone into production should have a soothing effect upon industry in general," said Clarence R. Falk, of the Falk Corp. Prospects for the electrical equipment industry are regarded as favorable by G. S. Crane, sales manager of the Cutler-Hammer Mfg. Co.

## Three Companies Get Excess Tax Refunds

WASHINGTON, Jan. 5—Three automobile companies are listed by the United States Treasury Department, as being entitled to refunds in the list of those who have paid \$50,000 or more in excess taxes to the Treasury. They are the Champion Ignition Co., \$86,456 refund; Cleveland Automobile Co., \$56,253, and the Hayes Wheel Co., \$63,497. Each of these companies is now operating under another name, the first is now AC Spark Plug Co., Cleveland Automobile is now consolidated as Chandler-Cleveland Motors Corp., and Hayes Wheel is now merged as Kelsey-Hayes Wheel Corp.

## White Visions 1928 Better Truck Year

CLEVELAND, Jan. 4—Business prospects for 1928 in the motor truck and bus industry indicate a much better year than 1927, according to Walter C. White, president of the White Co.

"The year now closing has been a year not only of severe competition, small margins of profit and dull business in certain localities, but a year of readjustment," Mr. White said. "New tendencies in highway transportation have dictated new developments in motor vehicles for hauling of both passengers and freight, as well as re-vamping of manufacturers' lines. Most of this work has been accomplished and we look forward eagerly to 1928 as a year of renewed activity in selling."

New light delivery and fast express trucks, and a new six-cylinder, 100-horsepower bus, introduced by White during 1927 are now in full production, Mr. White declared.

## Servel Plant Resumes

EVANSVILLE, IND., Jan. 3—With the refinancing program virtually completed the Servel Mfg. Co., builder of commercial car bodies, has resumed operations with about 300 men. Transfer of the Newburgh, N. Y., plant here has been effected, as part of the program to consolidate all branches in the local industry. The operating force will be gradually increased to about 2500 men by July, it was stated. The company in 1928 will specialize in Chevrolet truck bodies.

## Olds Service Men Meet

LANSING, Jan. 3—Parts and service men from all Oldsmobile branches and distributors in the United States are gathering at the Olds Motor Works for a school of instruction. Parts and service officials will speak.

## 70,000,000 Tire Sale Estimated for 1928

Ford Resumption Major Factor in Revival—Factory Changes Continue

AKRON, Jan. 3—The rubber industry is looking forward to a more prosperous 1928 than the year just closed. It is estimated that 10,000,000 more tires will be bought for the coming year, bringing the expected market to 70,000,000. The Ford awakening is one of the material reasons for the looked-for gain. Ford will use five tires instead of the customary four and the extra tire will help swell the volume of business.

It is expected an advance will be noted in crude rubber in the next few months, and this is certain to be accompanied by a rise in tire prices. Should the prices advance, the earning potentialities of most rubber plants will be greatly enhanced. The situation for the closing year can be found in expressions for Ohio businessmen after surveying a compilation of bank clearings. Akron and vicinity had no drop off in business, due to the rubber industry solely.

Many changes in factory personnel are being made in preparation for the new year's business. At Goodyear, R. L. Wilson, who recently succeeded L. L. King, resigned, as advertising manager, has been given the sales post. G. A. Waddle, Cleveland, is assistant to the sales manager. C. T. Hutchins, assistant sales manager, will become advertising manager. Joseph Mayl is the new manager of truck and bus tires. C. L. Cannon is sales personnel manager. Arthur W. Spore, assistant advertising manager, has resigned, but has made no announcement.

### Selects Los Angeles Personnel

Simultaneously with the Rockhill shift from Goodyear to Miller, a number of changes and promotions in factory organization have been announced by the B. F. Goodrich Co. Most of the men will be in charge of the Los Angeles branch of the plant which starts operation March 1. Men to fill their places will be announced after the first of the year.

F. E. Titus, former district manager of Goodrich, New York, has been made general manager of the Pacific coast organization. E. S. Sargeant, former credit manager, will be secretary and treasurer of the new plant. F. A. Mied, connected with the production department, will go as superintendent. F. C. Cory, of the auditing department, has been named auditor. A. D. McPherson, local purchasing department member, will be purchasing agent of the new subsidiary. Thomas A. Aspell, manager of the truck tire sales division, will become assistant manager of the manufacturers' sales division.



## 10 Associations Ask Larger Federal Aid

N. A. C. C. and A. A. A. and  
Many Highway Groups  
to Urge Expansion

WASHINGTON, Jan. 4—Hearings on the Dowell Highway bill (H R 383), known as the Federal-Aid measure, introduced in the House on Dec. 5, and providing the sum of \$75,000,000 annually for two years for Federal Aid highway construction, will be begun soon after Congress reconvenes, by the House committee on roads.

The present appropriation will expire on June 30, 1929, and the Dowell measure will provide for funds to be expended during the fiscal years of 1930 and 1931. Representatives from 10 national organizations have petitioned the committee stating their desires to be heard on the needs for increased Federal aid in highway construction. They are: The American Association of State Highway Officials, American Automobile Association, American Motorists Association, American Bankers, American Farm Bureau Federation, American Federation of Labor, National Grange, American Road Builders, National Automobile Chamber of Commerce and the United States Chamber of Commerce.

### Provides Road to South America

WASHINGTON, Jan. 4—The construction of an international highway linking up the United States with countries of Central and South America, is provided for under the terms of a bill, just introduced in the Senate by Senator Tasker L. Oddie of Nevada. Purpose of the highway not only would establish better facilities for transportation and communication between the various countries, but would be a "breeder of good will," the Senator predicts.

Another measure, introduced by the same Senator, would authorize the U. S. Bureau of Public Roads to loan engineers to assist the governments of the Latin-American republics.

### Mullins Increases Plant

SALEM, OHIO, Jan. 3—Increased activity in automotive manufacturing circles has resulted in an expansion program at the plants of the Mullins Body Corp. This concern has started erection of a new \$150,000 building to house certain departments, which have outgrown present quarters.

### Robert Bosch to Show Equipment

NEW YORK, Jan. 3—The Robert Bosch Magneto Co., Inc., will exhibit its newly developed fuel pump and injector nozzles for oil engines at the Good Roads Show in Cleveland, Jan. 9 to 13. The company's demonstration truck is to be sent to Cleveland by road and will be at the show for demonstrations.

## PRELIMINARY FACTS AND FIGURES AUTOMOBILE INDUSTRY 1927

By Alfred Reeves, General Manager

### National Automobile Chamber of Commerce

#### PRODUCTION

Cars and trucks .....	3,530,000
Cars .....	3,066,000
Trucks .....	464,000
Production of closed cars .....	2,452,000
Per cent closed cars .....	80%
Wholesale value of cars .....	\$2,190,000,000
Wholesale value of trucks .....	\$366,750,000
Wholesale value of cars and trucks .....	2,556,750,000
Tire production .....	66,000,000
Wholesale value of motor vehicle tires for replacement .....	\$595,000,000
Wholesale value of parts and accessories for replacements, also service equipment .....	\$750,000,000
Average retail price of cars .....	\$953
Average retail price of trucks .....	\$1,053
Number of persons employed in motor vehicle and allied lines....	3,675,000
Taxes on motor vehicles .....	\$725,555,812

#### REGISTRATION

Motor vehicles registered in U. S. ....	23,125,000
Motor cars (State reports) .....	20,140,900
Motor trucks (State reports) .....	2,985,000
World registration of motor vehicles .....	28,900,000
Per cent of world registration owned by U. S. ....	80%
Motor vehicle registration on farms .....	4,700,000
Miles of surfaced highway .....	575,000
Total miles of highways in U. S. ....	2,066,081

#### RETAIL FINANCING

Per cent new cars sold on time.....	58%
Per cent new trucks sold on time .....	55%
New cars average note at time of purchase .....	\$574
Used cars average note at time of purchase .....	\$286
New trucks average note at time of purchase .....	\$840

#### AUTOMOBILE'S RELATION TO OTHER BUSINESS

Number of carloads of automotive freight shipped over railroads in 1927 .....	3,125,000
Of rubber imported automobile industry uses.....	84%
Plate glass used by automobile industry .....	50%
Copper used by automobile industry .....	12%
Iron and steel used by automobile industry .....	14%
Gasoline consumed by motor vehicles, 1927 (gals.) .....	9,697,000,000
Motor oil consumption (gals.) .....	390,000,000
Crude rubber used in tires, 1927 (lbs.) .....	630,000,000
Cotton fabric used in tires, 1927 (lbs.) .....	219,000,000

#### MOTOR BUS AND MOTOR TRUCK

Buses in use .....	90,000
Motor buses produced .....	11,500
Consolidated schools using motor transportation .....	14,400
Street railways using motor buses .....	370
Buses used by street railways .....	8,600
Buses used by steam railroads .....	1,175
Steam railroads using motor buses .....	60
Railroads using gasoline rail motor coaches on short lines .....	199
Railroads using motor trucks as part of shipping service .....	58

#### EXPORTS

Number of motor vehicles exported (U. S. and Canada) .....	543,000
Value of motor vehicles, parts and tires exported (U. S. and Canada) .....	\$507,500,000
Per cent increase in motor vehicles exports over 1926 .....	12%
Per cent of motor vehicles exported .....	15%
Number of motor vehicles imported .....	660

#### MOTOR VEHICLE RETAIL BUSINESS IN U. S.

Total car and truck dealers .....	52,592
Public garages .....	52,086
Service stations and repair shops .....	85,983
Supply stores .....	67,753

## Men of the Industry and What They Are Doing

### Baus and Chanter Take New Studebaker Posts

R. E. Baus, formerly general superintendent of Studebaker's Detroit plants, has been named acting director of purchases to succeed Arthur J. Chanter, the Studebaker Corp. of America has announced. Mr. Chanter, formerly assistant to the president, and more recently director of purchases, joins the sales department as manager of branches.

Clete Mulick becomes manager of Western branches, directing Chicago, Omaha, Kansas City, Portland, San Francisco, Los Angeles and St. Paul. C. K. Whittaker becomes manager of Central and Southern branches directing Atlanta, Detroit, St. Louis, Cincinnati, Jacksonville, South Bend, Dallas and Memphis. W. K. Erdman becomes manager of Eastern branches directing Boston, Cleveland, Pittsburgh, Buffalo, New York, Utica, Charlotte, Philadelphia and Washington.

Kirk A. Metzgerott becomes manager of the New York branch; A. B. Connelly becomes systems manager of Eastern branches; P. A. Rumpf becomes branch manager at St. Paul, succeeding C. R. Arenschield, who has been transferred to the systems division; R. W. Walker becomes branch manager at Dallas, and J. R. Ackerman becomes acting branch manager at Detroit.

### McIntyre Sells Equipment

George W. McIntyre has been appointed New York representative of a direct sales office to be opened by Reed-Prentice Corp., Worcester, Mass., in the Evening Post Realty Building. Mr. McIntyre was for many years connected with Niles-Bement-Bond Co., New York and Chicago, and will cover the sale of the complete line of machine tool equipment and Wolf portable timber sawing machines in New York territory.

### Brisbin Vice-President

The Columbus McKinnon Chain Co. has elected Donx S. Brisbin vice-president and also a director. Robert Gerspacher has been appointed manager of automotive sales in the Chicago territory.

### Lincoln Transfers Van Horne

John Van Horn has been transferred by the Lincoln Electric Co. from Atlanta to Moline where he will cover the Tri-Cities under the direction of R. D. Malm, western manager.

### Birch Joins Franklin

Frank Birch, automobile body construction expert, has joined the experimental body department of the H. H. Franklin Mfg. Co. Mr. Birch was formerly with Olds Motor Works and later has been with the Peerless company.

### Sweden to Import 18,000 Cars in 1928

Emil Salmson, president of the Swedish Automobile Importers Association, has arrived in New York to attend the national automobile show. He was greeted on arrival by a committee of the National Automobile Chamber of Commerce and during the week will be the guest of the Rubber Association of America, Inc., the Motor & Accessory Manufacturers Association and other automotive groups. Mr. Salmson estimates that the motor transport needs of Sweden will create a demand for the importation of 18,000 cars in 1928.

### Morris Visits Territories

W. R. Morris, head of Morris Motors, has sailed from England on a trip to Canada, Australia and New Zealand to study the prospects of the British automotive industry in those countries. He hopes to find business for the British manufacturers and consequently cut down the sale of American products. Speaking of the potential American competition both in England and in the dominions, Mr. Morris pointed out that American manufacturers are now turning out cars built along British lines because the roads of the dominions have improved to such an extent that the British type car is now adaptable with little or no change.

### Guthrie Goes Abroad

W. G. Guthrie will sail for London, Jan. 15, take over his new position with the General Motors Export Co. He will become regional production manager for the territory including Germany, France, Denmark, Sweden, Egypt and Spain. Previous to going with Peerless Mr. Guthrie was connected with the Buick and Oldsmobile divisions of General Motors.

### Sterling Promotes Keenan

H. C. Keenan, general sales manager of the Sterling Motor Truck Co., has been elected vice-president in charge of distribution. Mr. Keenan has been connected with the truck industry for the past 12 years, coming to Sterling from Master Truck, Inc.

### Pearson Back in New York

O. P. Pearson, statistician for the National Automobile Chamber of Commerce, has returned from the joint meeting of the American Statistical Association and the American Economic Association, held in Washington.

### Swayne Sees Opportunities in South American Field

Opportunities for broadening the sale of American cars, trucks and buses in South American markets were detailed in a report to the directors of the National Automobile Chamber of Commerce by Alfred H. Swayne, vice-president of General Motors Corp., upon his return from visits to Brazil, Uruguay, Argentina, Chile and Peru.

Mr. Swayne said in part that over 90 per cent of all the cars imported by South American countries are of American manufacture; that light and small trucks and buses are coming into broader use; that railroad officials in South America are receptive to this new ally of transportation, and that the greatest need in South America is for more highways which are now being built at a more rapid rate than a few years ago.

Mr. Swayne said that women are beginning to drive in South American countries, particularly in Brazil, where they favor sport model cars.

### Horning and Fisher Back

H. L. Horning, president, and J. B. Fisher, chief engineer, of Waukesha Motor Co., have returned from an extended tour of Great Britain and the Continent. They visited many of the leading automotive plants in England, France, Belgium, Germany and Italy, investigating advanced ideas in designs and methods shown in recent European development. While in England they spent some time with Harry R. Ricardo, with whom they discussed and exchanged ideas, based upon their recent researches.

### Raskob Named Director

John J. Raskob, chairman of the finance committee of General Motors Corp., has accepted an invitation to become a director of the American International Corp.

### R. H. Hills Retires

Robert H. Hills, vice-president of the Biddle & Smart Co., Amesbury, Mass., has resigned. Except for his interest in the Amesbury Brass & Foundry Co., he will retire to private life.

### Hotchkiss Now Chairman

H. Stuart Hotchkiss, president of General Rubber Co., has been elected chairman of the board of directors and is succeeded in the presidency by L. D. Tompkins.

### Dyer Heads Advertisers

Carlton L. Dyer, advertising manager of the Ford Motor Co. of Canada, Ltd., has been elected president of the Association of Canadian Advertisers.



## Whippet Reductions Range \$90 to \$200

Coupe Cabriolet at \$545 is  
Under Ford Model—Seeks  
1000 Daily Output

TOLEDO, Jan. 3—Drastic price reductions ranging from \$90 to \$200 on Whippets were announced by John N. Willys, president of the Willys-Overland Co., before 1000 dealers, distributors and branch managers here. Automotive history was made when one of these models was priced below the Ford model. The new Whippet coupe cabriolet price was cut \$200 to a new level of \$545 to compare with Ford's price of \$550 on the same model car.

The new Whippet will sell in touring model at \$455, reduced \$170 from former price; roadster \$485, reduced \$170; coupe \$535, reduced \$90; coach \$535, reduced \$90; sedan \$585, reduced \$140; cabriolet \$545, reduced \$200; chassis \$355, reduced \$90, and commercial roadster with pickup body \$500, reduced \$125.

Mr. Willys said the company expected a production of between 300,000 and 400,000 cars for 1928. He said the plant was equipped now to produce a maximum of 2000 chassis daily, and that the new prices were in anticipation of a volume of at least 1000 cars a day. This production will probably be reached before the end of January and be rapidly increased so that a maximum may be reached by March.

It was announced that the prices of the Great Six and Special Willys-Knight lines would be unchanged, but the new Standard Six model Willys-Knight will sell for \$1,145 in coach, \$1,195 in coupe and \$1,245 in sedan models. These prices considerably broaden the market of the Willys-Knight.

## Packard Lowers Prices on Eight-Cylinder Line

DETROIT, Jan. 3—Price reductions ranging from \$75 to \$700 have been made by Packard Motor Car Co. on its eight-cylinder line, the lower prices being made possible by the largest year's business in its history, the company announced. The new prices follow:

	New	Old
Seven-pass. sedan.....	\$4,450	\$5,150
Seven-pass. sedan-lim. ....	4,550	5,250
Two-pass. conv. coupe ....	4,250	4,950
Two-pass. coupe .....	4,150	4,800
Five-pass. club sedan .....	4,450	4,950
Four-pass. coupe .....	4,450	4,950
Two-pass. runabout .....	3,875	3,975
Five-pass. phaeton .....	3,875	3,975
Seven-pass. touring .....	3,975	4,050

## Badges to Aid Visitors

NEW YORK, Jan. 3—In order that visitors to the shop equipment section of the national automobile shows may distinguish between manufacturers' representatives and the representatives

of jobbers who are cooperating with manufacturers in these shows, these representatives will wear colored badges. Manufacturers' representatives will wear red badges, with the word "manufacturer" and a place for their own name and firm name and jobbers' representatives will wear blue badges with the word "jobber" and a place for other information thereon.

## Fairchild-Vickers Form Plan

NEW YORK, Jan. 3—The Fairchild Aviation Corp. and subsidiaries have entered into a reciprocal agreement with the Canadian Vickers, Ltd., in Montreal whereby the former will manufacture Vickers two-place flying boats in this country and the latter will manufacture Fairchild cabin monoplanes in Canada. The Vickers company will also provide spare parts and accessories in Canada for any American Fairchilds which are now being used there.

## Meetings and Events Scheduled for Week of New York Automobile Show

### FRIDAY, JAN. 6

Stutz Motor Car Co. of America, Inc., Salesmen's and Dealers' Meeting, Branch Office ..... 8.00 p. m.

### SATURDAY, JAN. 7

Hupp Motor Car Corp., Luncheon and Meeting, every day, Commodore Hotel.  
Studebaker Corp. of America, Dinner, Hotel Plaza ..... 7.00 p. m.

### MONDAY, JAN. 9

American Automobile Association Contest Board, Roosevelt Hotel ..... 10.00 a. m.  
National Automobile Dealers Ass'n Eastern Districts Convention, Commodore Hotel ..... 10.00 a. m.  
Oakland Motor Car Co., Meeting, Roosevelt Hotel 1.00 p. m.  
Banquet, Roosevelt Hotel. 6.30 p. m.  
Rubber Association of America, Inc., Meeting and Luncheon, Commodore Hotel ..... 10.00 a. m.  
Dinner, Commodore Hotel. 7.00 p. m.  
Society of Automotive Engineers, Metropolitan Section Show Dinner, Commodore Hotel ..... 6.30 p. m.  
Meeting, Commodore Hotel 8.00 p. m.  
John N. Willys' Luncheon to Trade and Newspapermen, Biltmore Hotel ..... 12.30 p. m.

### TUESDAY, JAN. 10

American Automobile Association, Board of Directors Meeting, Roosevelt Hotel. 10.00 a. m.  
National Association of Automobile Show and Association Managers, Luncheon, Waldorf-Astoria..... 1.00 p. m.  
National Automobile Chamber of Commerce Banquet, Commodore Hotel ..... 6.30 p. m.  
Packard Motor Car Co., Meeting and Luncheon, Packard Distributors and Dealers, Biltmore Hotel, 9.00 a. m. to 5.00 p. m.

Paige-Detroit Motor Car Co., Luncheon, Roosevelt Hotel Noon

### WEDNESDAY, JAN. 11

American Automobile Association, Bus Division, Roosevelt Hotel ..... 10.00 a. m.  
Auburn Automobile Co., Luncheon, Commodore Hotel ..... 1.30 p. m.  
Cadillac Motor Car Co., Dinner, Hotel Astor ..... 7.00 p. m.  
Chevrolet Motor Co., Business Meeting, Mecca Temple ..... 1.30 p. m.  
Banquet Commodore Hotel ..... 6.30 p. m.  
H. H. Franklin Mfg. Co., President's Luncheon, Commodore Hotel ..... 1.00 p. m.  
Gardner Motor Co., Luncheon and Meeting, Hotel Belmont ..... 1.00 p. m.  
Jordan Motor Car Co., Luncheon, Biltmore Hotel ..... 1.00 p. m.  
Motor & Accessory Manufacturers Ass'n, Annual Meeting, Hotel Astor..... 2.30 p. m.  
Banquet, Hotel Astor..... 7.00 p. m.  
Nash Motors Co., Warren-Nash Motor Corp., Dealer Meeting.  
Olds Motor Works Business Meeting, Mecca Temple... 1.00 p. m.  
Show Dinner, Hotel Biltmore ..... 7.00 p. m.  
Packard Motor Car Co., Meeting and Luncheon, Packard Distributors and Dealers, Biltmore Hotel, 9.00 a. m. to 5.00 p. m.  
Peerless Motor Car Corp., Dinner, Commodore Hotel 6.30 p. m.  
**THURSDAY, JAN. 12**  
Overseas Automotive Club, Dinner, Hotel Astor ..... 6.30 p. m.  
Society of Automotive Engineers, Dinner, Hotel Astor ..... 6.30 p. m.  
Velle Motors Corp., Luncheon and Business Meeting, Commodore Hotel ..... 1.00 p. m.  
Willys-Overland, Inc., Dealer Meeting and Banquet, Hotel Astor

## Seiberling Pays Off Goodyear Obligation

AKRON, Jan. 4—Frank A. Seiberling, founder of the Goodyear Tire & Rubber Co., has made a cash payment of \$5,300,000, due on obligations incurred in the Goodyear collapse of 1921.

The money was earned in one of the most remarkable comebacks in financial history. Mr. Seiberling organized the Seiberling Rubber Co. with the financial backing of friends. The company earned \$1,356,707 for the first 11 months of 1927, with a sales volume of \$12,367,114. Current assets were listed at \$3,744,224, more than current liabilities.

The Prudential Securities Co., which took over Mr. Seiberling's assets, has been dissolved and a new corporation formed which controls 131,000 shares of Goodyear stock.

## Industry in Germany Now Reorganizing

Passenger Car Builders Most Seriously Affected, Commerce Department Reports

WASHINGTON, Dec. 31—A survey, of the automobile industry in Germany just made in a report to the Department of Commerce shows that 1927 was a critical one for German manufacturers and that the automobile industry in that country is at the present time in a state of reorganization.

Following is a summary of the report to the department:

"Those firms producing passenger cars only have been most seriously affected, while manufacturers of trucks have only suffered in a secondary manner. A number of firms were obliged to liquidate, while others were able to resume activity after cancellation of their debts. It is characteristic of the development of the German automobile industry that none of the old leading firms had to undergo a fundamental reorganization, although this favorable result was brought about by bank credits which were used to an extent never witnessed before in the history of the banking trade.

"Optimism prevails regarding the further development of the local industry, although the difficulties arising from the decreased import duties on foreign motor vehicles are completely understood. Development of Germany's export trade, however, indicates that her products are gradually penetrating foreign markets."

### Belgian Competition Grows

WASHINGTON, Dec. 31—American medium-priced cars in Belgium are meeting with keen competition from local manufacturers in that country, according to advices received by the United States Department of Commerce. French and Italian light cars also are reported affected. Prospects are reported decidedly optimistic by domestic manufacturers of models priced around \$1,000 and the output of Belgian manufacturers will be increased 50 per cent during 1928, the department is advised.

### Aircraft Exports Gain 43 Per Cent

WASHINGTON, Jan. 4—Exports of aircraft products from the United States during the first 10 months of this year total \$1,469,592 and represent an increase of 43 per cent over the total exports of 1926, according to summary of figures announced by the U. S. Bureau of Foreign and Domestic Commerce.

### Buick Returns to Work

FLINT, Jan. 3—Production activities will be resumed by the Buick Motor Co., in all departments Jan. 9, following the usual winter lay-off for inventory.

## Vatican Carriages Give Way to Cars

WASHINGTON, Jan. 5—All horse-drawn carriages in use by the Vatican at Rome, which have long been traditional, are to be displaced with the more modern form of transportation—automotive equipment, the automotive division of the Department of Commerce is informed.

Not until two years ago was an automobile ever seen in the gardens and grounds adjacent to the apostolic palace. At that time the Pope was presented with a car by one of the leading makers of Italy. Since that time several cars have been added as gifts, the latest being one from General Motors. Now the Vatican is to be completely motorized.

## American Cars Increase Favor in Czechoslovakia

WASHINGTON, Dec. 31—Three changes in the trend of the automotive market in Czechoslovakia are reported to the Department of Commerce.

These three major developments in the industry in that country are: (1) The domestic automobile industries changed from four-cylinder to six-cylinder cars and from European to American body design, a change which should still further increase the already dominant position of American cars on the market; 2. the basis of automobile taxation was changed on Oct. 1, 1927, from a heavy, single luxury tax to a moderate, annual road tax, and (3) an extensive program of highway construction was adopted by the government and the necessary enabling legislation was passed by Parliament.

The popularity of American automobiles in Czechoslovakia is reported to be steadily increasing. The most popular car is a medium-priced American machine equipped with European type motors. This is because of the lower operating cost and tax liability. The comparative position of American cars is gaining more than the expansion of French and Italian products.

## Navy Buys 26 Planes

WASHINGTON, Jan. 6—Contracts for the purchase of 26 planes were let this week by the Navy Department. One contract was for 25 ships, let to the Douglas company, of Santa Monica, Cal., at a contract price of \$1,553,505 for planes and parts. The planes are to be equipped with two air-cooled engines of 500 hp. each, either Pratt & Whitney or Wright. The other contract was for one plane, let to the Hall Aluminum Aircraft Corp., New York, for one type V two-engined 500 hp. plane at a cost of \$131,612.

## Steel Mills Start on Higher Capacity

Heavy Accumulation of First Quarter Orders Seen Delaying New Buying

NEW YORK, Jan. 5—Steel mills were able to start 1928 operations with rolling schedules that permit of extended employment of plant capacity. Accumulation of first quarter specifications for material contracted for at fourth quarter of 1927 prices is heavier than generally thought and, as most of the consumers are covered for their January needs, new orders can not be expected to come through at a rapid pace.

In view of the heavier requirements for sheet bars anticipated from rollers and of slabs by strip mills, the market for semi-finished material displays a stronger undertone with sheet bars held at \$34 and billets and slabs at \$33. Fair-sized contracts are reported to have been placed for cold-finished steel bars which sold last month at as low as 2.10 cents. According to the sellers, new contracts carry a 2.20 cent price, and no shipments on account of old contracts will be billed at below the 2.20-cent level after this month.

There is still talk of a further advance in hot-rolled bars in the immediate future, and this would make for another upward revision in the price of cold-finished bars. The strip-steel market is rather irregular, producers being influenced in their quotations by the extras involved in individual orders. The ruling quotation for cold-rolled strips is 3 cents, with a \$5 per ton rebate on shipments of three tons and over of one size and temper at one time and a premium over the base price in the case of very small orders. Demand for automotive alloy steels has broadened. Bolts and nuts are not very active, occasional spot orders being filled at 70 per cent off, but automotive consumers appear to have covered their first quarter requirements.

**Pig Iron**—Having figured prominently as buyers in the pig iron market during the closing period of last year, automotive foundries are beginning to draw against their contracts. The market is steady.

**Aluminum**—In the outside market virgin foundry metal, 98 to 99 per cent pure, has been offered at 23.90 cents, 40 points below the 24.30-cent price of the domestic producer, recently announced. It is quite obvious that importers will continue to meet whatever prices the American producer may establish. A good many 1928 contracts are still hanging fire.

**Nickel**—The leading interest announced a reduction of 2 cents a pound in the price of electrolytic nickel, 99.9 per cent pure, making the price for that grade 37 cents.

**Copper**—The market is largely under the influence of European demand which continues heavy.

**Tin**—Consuming demand is of routine character. The metal's statistical position supports prevailing values.

**Lead**—Demand rules light with the market easy.



## Exports, Imports and Reimports of the Automotive Industry for November of Current Year and Total for Eleven Months Ending November, 1927

	Month of November		Eleven Months Ending November			
	1926	1927	1926	1927	1926	1927
Automobiles, parts and accessories .....	Number	Value	Number	Value	Number	Value
Electric trucks and passenger cars .....	..	\$26,635,980	..	\$29,967,282	..	\$294,925,090
Motor trucks and buses, except electric (total) .....	2	1,300	1	4,088	93	130,362
Up to 1 ton, inclusive .....	7,395	4,555,407	10,009	6,424,894	63,001	43,849,114
Over 1 and up to 2 1/2 tons .....	5,920	2,510,771	8,273	4,025,728	49,611	22,920,170
Over 2 1/2 tons .....	1,259	1,402,533	1,579	2,023,633	11,301	14,495,476
PASSENGER CARS .....	216	642,103	157	375,533	2,089	6,433,468
Passenger cars, except electric (total) .....	20,639	15,050,442	21,396	16,396,502	216,753	160,416,515
Value up to \$500, inclusive .....	9,862	4,007,604	3,985	1,448,665	89,419	34,605,307
Over \$500 up to \$800 .....	4,739	3,342,623	6,700	3,698,783	60,443	41,480,592
Over \$800 up to \$1,200 .....	4,617	4,890,455	7,259	5,962,040	51,190	54,061,358
Over \$1,200 up to \$2,000 .....	901	1,393,908	2,642	3,335,450	10,506	16,143,377
Over \$2,000 .....	520	1,415,852	810	1,951,564	5,195	14,125,881
PARTS .....	..	..	..	..	..	..
Parts, except engines and tires .....	..	2,765,405	..	1,819,426	..	36,856,268
Automobile unit assemblies .....	..	3,150,821	..	4,312,835	..	32,854,899
Automobile parts for replacement .....	..	633,179	..	563,573	..	8,618,733
Automobile accessories .....	..	427,202	..	309,990	..	6,382,174
Automobile service appliances (n. e. s.) .....	11	16,480	29	6,271	159	171,691
Station and warehouse motor trucks .....	126	37,411	58	23,251	954	333,273
Trailers .....	1	5,083	8	128,000	36	166,509
Airplanes, seaplanes and other air craft .....	..	5,063	..	31,731	..	133,085
Parts of airplanes, except engines and tires .....	..	..	..	..	..	..
BICYCLES, ETC. .....	321	8,448	413	9,817	4,834	138,443
Bicycles .....	1,447	322,884	1,551	348,837	20,818	4,520,137
Motorcycles .....	..	144,473	..	141,518	..	1,611,172
Parts, except tires .....	..	..	..	..	..	..
INTERNAL COMBUSTION ENGINES .....	..	..	..	..	..	..
Stationary and Portable .....	..	..	..	..	..	..
Diesel and Semi-Diesel .....	28	127,121	15	111,418	738	1,479,316
Other stationary and portable: .....	..	..	..	..	..	..
Not over 10 Hp. .....	2,885	247,463	2,477	225,324	31,046	2,963,261
Over 10 Hp. .....	250	314,453	311	117,712	2,701	2,443,437
Automobile engines for: .....	..	..	..	..	..	..
Motor trucks and buses .....	185	31,556	118	53,017	3,646	523,446
Passenger cars .....	2,373	447,870	2,283	392,947	112,281	11,675,754
Tractors .....	246	83,946	45	18,067	2,113	1,115,078
Aircraft .....	2	1,087	10	56,838	296	569,232
Engine Accessories and parts .....	..	358,135	..	207,595	..	3,957,757
IMPORTS .....	..	..	..	..	..	..
Automobiles and chassis (dutiable) .....	90	109,223	65	156,254	738	1,220,754
Other vehicles and parts for them (dutiable) .....	..	13,514	..	32,669	..	145,603
REIMPORTS .....	..	..	..	..	..	..
Automobiles (free from duty) .....	29	36,912	10	42,913	181	267,201

## 11 Months' Exports Total \$377,458,512

WASHINGTON, Jan. 5—Automotive exports from the United States during November totaled \$31,197,629, bringing the total exports for the first 11 months of last year up to \$377,458,512, according to figures of the U. S. Department of Commerce. The November exports represented a gain of 12.2 per cent over those of November, 1926, and a gain of 5.9 per cent over October.

The November exports totaled 20,639 passenger cars and were 9.3 per cent of production. Truck exports totaled 7395 units and were 21.8 per cent of November production. For the 11-month period the passenger car exports were 262,269, being 9.3 per cent of the production of 2,832,118. Truck exports for the 11 months were 98,321, being 23 per cent of the production, amounting to 427,200 trucks.

November imports totaled 69, valued at \$156,254. Total motor vehicle imports first 11 months were 592, valued at \$1,095,298.

### Wico to Expand Exports

SPRINGFIELD, MASS., Dec. 31—Magneto manufactured in the London branch plant of Wico Electric Co. are standard equipment for approximately 70 per cent of industrial engines using such equipment in England, according to Edward L. Stoughton, vice-president and sales manager of the company, on his return from a visit to England. Since opening this plant more than a year ago the concern is said to have

made rapid headway with its foreign business. A sales representative will leave here the first of the year to look after prospects in Australia, Japan and China.

### Australian Body Builder to Reorganize Company

WASHINGTON, Jan. 5—Due to financial difficulties the firm of Smith and Waddington, prominent body building concern in Australia, has temporarily suspended operations, the U. S. Department of Commerce is advised. During an 18 months' period the concern sustained a loss of £26,443, the department's representative advises. Plans are being made for a reorganization of the concern which is located at Sydney.

### Lower Motorcycle Duty

WASHINGTON, Jan. 5—A change in the Australian tariff on motorcycles has been reported to the tariff division of the U. S. Department of Commerce. Effective Nov. 25 last, the law was modified reducing the general duty from 30 per cent to 20 per cent ad valorem on motorcycles and the British preferential rate of 20 per cent was removed entirely. Duty on parts was also reduced.

### Graham Plant Resumes

EVANSVILLE, IND., Jan. 4—Round-ing out the biggest year in its history the local Graham Brothers division plant of Dodge Brothers, Inc., reopened Jan. 3 after inventory.

## U. S. Exports Show 3 Per Cent Increase

WASHINGTON, Dec. 31—American exports the first nine months of this year totaled \$3,500,000,000—an increase of 3 per cent over the exports for the same period of 1926, according to figures on world trade issued by the U. S. Chamber of Commerce. While the general gain was 3 per cent, automobile and truck exports showed an increase of 30 per cent this year over last, the figures show.

The total value of automobile and truck exports was \$217,000,000, a 27 per cent gain for the nine months of 1927, while parts and accessories totaled \$88,500,000, or \$11,400,000 more than in 1926. Eighty-two of the country's 132 exports, recorded quantity increases this year.

### German Makers Oppose Displacement Tax Basis

WASHINGTON, Jan. 6—A proposed change in the method of taxing automobiles in Germany is being met with severe criticism by the German makers and dealers, according to reports to the automotive division of the Department of Commerce. A new law, which becomes effective April 1, provides that the basis of the tax shall be on engine displacement, which gives the American low priced car a decided advantage, the German manufacturers complain. Heretofore the basis for taxation has been on horsepower plus a gasoline tax.

## Brosseau Outlines Year's Truck Trend

Demand for High Speed Vehicles and Conservative Selling Are Features

NEW YORK, Jan. 7—Truck production in 1927 approximated 464,000, the third successive year in which the total has exceeded 450,000, according to A. J. Brosseau, vice-president of the commercial car division of the National Automobile Chamber of Commerce. During the year, bus registration has increased to 90,000 units as compared with 80,000 a year ago.

Speaking of commercial vehicle developments during the year, Mr. Brosseau said in part:

"From the truck manufacturing point of view, two trends in particular marked the year. First was the demand for high-speed, pneumatic tired vehicles; and second, increasing conservatism in selling methods. Both had a pronounced effect upon the market, and the latter brought portents of better business in years to come. The demand for increased speed is partly a reflection of the intensity of modern business competition and partly the result of traffic conditions. More and more heavy trucks are being equipped with pneumatics in an effort to check the trend toward lighter vehicles so equipped.

"Conservatism in selling methods has followed a period of 'production' selling under the theory that the lower overhead made possible by quantity production was sufficient to warrant a considerable volume of risky selling. Decrease in demand for heavy duty truck in 1927 was due to a considerable extent to this tightening of credit and absorption of trucks for which there was little or no economic need when sold during the previous two years. Such trucks should be fully absorbed by now, making the 1928 market much more promising than during the last few years.

### Buses in Three Groups

"Bus use is generally classified in terms of ownership, into three groups—independent, street railways and steam railroads. There have been many developments during the past year in all three fields including appreciable growth in the number of buses in service used by each type of operator.

"The independent group remains preponderant in numbers. Furthermore many of the old and well established lines appear to have built up a large measure of financial stability. As has been the case since buses first came into use, many more independent lines have been started during the past year that have been dropped for lack of public support.

"Increasing use of buses by steam railroads has resulted in the doubling of the number of bus units in railroad

## U. S. Cavalry to Add Motor Car Equipment

WASHINGTON, Jan. 4—Effective Feb. 1, the War Department announces each regiment of cavalry will be equipped with three heavy-duty motor trucks and three cross-country cars, as a part of a cavalry regiment's regular equipment. This is an entirely new departure and is made by the department, it announces, only after a series of exhaustive surveys in which it was demonstrated that motor transportation is desirable from an efficiency standpoint.

service from about 600 on Jan. 1, 1927, to about 1200 Jan. 1, 1928. This growth in the steam railroad field, while not as large as expected, or as warranted by the economies involved, reflects a steady growth that has been very satisfactory to the railroads as well as to the public. About 60 railroads are using buses either directly or through subsidiaries."

## G.M. Truck Adds Model, New Plant Now Complete

PONTIAC, Jan. 3—Soon after the New York automobile show, General Motors Truck Co. will move its executive and production activities into its new plant here, which is now about ready for occupancy.

The General Motors de luxe delivery line, of 1000-lb. capacity, which in the past has been known as the T-10, will become the T-11, and the new 2000 lb., six-cylinder truck will be known as the T-19. The T-20 one-ton and the T-40 and T-50 two-ton, as well as the K-54, 2½-ton; the K-56, three-ton; the K-72, 3½-ton and the K-102, 5-ton all are being continued.

The T-19, 2000-lb capacity six-cylinder truck will be powered with the improved Pontiac engine. The chassis will be equipped with four-wheel brakes and four-speed transmission. The bodies will be factory-engineered and factory-built.

In the T-11, a 1000-lb. truck, the new series improved six-cylinder Pontiac engine will be used. There will be two factory-built body types—the de luxe panel and the de luxe screen side. This model will also have four-wheel brakes. The road clearance has been increased and the capacity of the bodies made larger.

## Hendrick Opens Office

CHICAGO, Jan. 3—Hendrick Mfg. Co., Carbondale, Pa., has opened an office in the Railway Exchange Bldg. here for the development on business on its Mitco gratings, stair treads and armorgrids. Lon Sloan is in charge.

## Hare-Chase Passes to New Corporation

Keystone Acceptance Formed in Reorganization to Continue Finance Business

PHILADELPHIA, Jan. 4—Keystone Acceptance Corp. has been formed here to take over the good-will and current business of Hare & Chase, Inc., this action being taken after the liquidation down of most of the outstanding paper of the former company. The Keystone company will operate the automotive financing business formerly conducted by Hare & Chase but will confine its operations to the states of Pennsylvania, New Jersey, Maryland and Delaware and the District of Columbia.

Officials of the Keystone company will be announced within a short time. The new company was formed in the interest of the stockholders of the former Hare & Chase company who participate in the reorganized business. Interests associated with the Finance Co. of America have made a substantial investment in the preferred stock of the new company and the Royal Indemnity Co. interests also have subscribed for stock to assist in the reorganization. Operations of the Keystone company will be under like management with the Finance Co. of America. Capital is said to be adequate for all immediate requirements.

A separate corporation called the Hare & Chase, Inc., Reorganization Co. has taken over the remainder of the subsisting assets of Hare & Chase, Inc., for the purpose of realizing upon them. Among these assets is a claim for \$3,000,000 against the National Surety Co., which is alleged to be due to Hare & Chase, Inc., under an "ultimate loss bond."

## Cutler-Hammer Opens Pacific Coast Offices

MILWAUKEE, Jan. 3—Pacific Coast business of the Cutler-Hammer Mfg. Co. will now be handled at its own sales offices, 970 Folsom St., San Francisco; 229 Boyd St., Los Angeles; 2203 First Ave., South, Seattle. The new sales district will be in charge of Fred H. Oberschmidt, a member of the Cutler-Hammer organization for over 15 years. Associated with Mr. Oberschmidt at the San Francisco headquarters office will be A. A. Tuffert and George P. Stone. Thomas N. Bristow will be in charge of the Seattle office and Edward G. Nelson of the Los Angeles office.

Complete stocks of standard items in the Cutler-Hammer line will be carried at all Pacific Coast offices and special arrangements have been completed whereby production and shipment of special equipment for the coast, built in the Cutler-Hammer factories at Milwaukee and New York, will be given preferred attention.



# Retail Centers See Early Buying Start

(Continued from page 30)

eral weeks away, but the indications are that beginning with February the production ratio will be as large if not larger than in 1927.

Reports from leading cities follow:

## BOSTON

Motor car dealers are entering 1928 cheerily. Sales picked up after the Ford announcement cleared the air. New and used car stocks are not very heavy. Used car sales were slow in December, while new car sales moved along fairly well, especially in some of the higher priced classes. Another factor making the dealers optimistic is that next year buyers will not be muddled up over the compulsory insurance law.

## NEW YORK

Sales have been comparatively slow during December. Orders taken for the new Ford have been almost phenomenal but the expected release of buying power for other cars has not materialized to any marked degree. Users who are not interested directly in the new Ford are waiting to see what new models will be offered at the show. Sales of cars in this territory during the first two weeks of December were 1373 as compared with 1934 in the 1926 period, according to Sherlock & Arnold. There has been some active selling of used cars, due to special drives, but the used car surplus is by no means wiped out. Stocks of both new and used cars continue rather burdensome but dealers are in better position than a year ago. Dealers generally feel optimistic for 1928.

## ATLANTA

New car sales during December were close to normal. Dealers report the new Ford having a favorable affect on other lines, but announcement that new cars are to be brought out by other large manufacturers is causing some prospective buyers to hold off. Outlook for the first part of 1928 is that sales will be larger than in the first part of 1927. Business as a whole in 1927 was approximately the same as in 1926. Used car stocks continue heavy. In the motor truck field sales in 1927 were generally larger than last year.

## CINCINNATI

A distinctive slump in automotive business in December followed the Ford announcement. Disappointment is keen with a majority of dealers, both in cars and accessories. Registrations for the month up to Dec. 13 were 823 new cars in Hamilton county and 2820 used cars. These figures compare with 1047 new cars and 2270 used registered during the same period in 1926. All dealers are stocked heavily with new cars, though used car stocks are comparatively low due to junking. Opinions are divided as to the outlook, but conservative dealers see good demand ahead.

## CLEVELAND

Sales of both new and used cars have been exceedingly light during the past month. Totals will fall far below previous December records. Coincident with the introduction of the new Ford, there was a slight upturn in interest. It sloughed off almost immediately, although used car sales showed a slight spurt during the week prior to Christmas. Optimism is expressed over the outlook for 1928. Used car prices, it is predicted, will hit a new low level during the summer.

## KANSAS CITY

New car sales in December were 15 to 20 per cent better than a year ago. The arrival of the new Ford model has cleared the atmosphere and dealers report finding less sales resistance. The used car situation is the best here in years. Dealers all are predicting good business in 1928, with the first six months especially promising. General conditions indicate continuance of good business, dealers assert.

## CHICAGO

With the outlook for 1928 distinctly optimistic, dealers and distributors are ending December with sales for the month showing a gain over both November and December of last year. New car stocks are low. Used car markets have received a distinct shock as a result of the introduction of the new Ford, but stocks are below normal. The attention focused upon the industry as a whole when the new Ford was placed on the market increased December business for representatives of all makes.

## DETROIT

New car sales appear to have reached their lowest ebb in December. Dealers also report slackening demand for used cars with a result that in many instances drastic price cuts are being made. The feeling is general, however, that as soon as the public knows of the new models which will be introduced prior and during the New York Automobile Show, car sales will begin to show an improvement. Dealers handling higher priced cars report more difficulty in merchandising the higher priced used cars due to a tendency on the part of the buying public to purchase new cars of cheaper makes.

## MILWAUKEE

Opinion as to prospects in 1928 is practically unanimous that it will be a good year. New car stocks are in no wise uncomfortably large. December sales were sufficiently large to absorb surplus, and most dealers carried fewer cars into the new year than a year ago. It is difficult to predict what effect the actual marketing of the new Ford will have on used car sales, although so far some prospects for used cars have informed salesmen that they would prefer to wait until they can get delivery of a new Ford.

## ST. LOUIS

A marked improvement in demand for all classes of automobiles has been noticed since the new Ford announcement. Dealers in all lines have profited and the year has wound up strongly leaving a bright outlook for the early months of 1928. Used car stocks have been reduced by reductions in prices. Stocks of new cars are about normal.

## NEW ORLEANS

The automotive situation at the close of the year is anything but satisfactory. The combination of the adverse effect from floods in this section, with its attendant depression of business, as well as the adverse effect of the new Ford on the industry as a whole, has produced an un-

favorable situation. The new Ford has practically paralyzed sales of other makes of light cars and has demoralized the used car market. The new Ford truck has also adversely affected the sale of all makes of light trucks in this section. Most dealers are confident that the new year will produce much better conditions in this vicinity.

## MINNEAPOLIS

The automobile business is at a standstill practically. The snow is too deep to sell new cars extensively and there is no market for used cars. However, the feeling of optimism among dealers and the general public alike is strong. In prospect the situation is far ahead of a year ago. The problem is just how far dealers will be able to finance used cars taken in trade until that market opens. Good spring business is the outlook.

## DENVER

Trade conditions are still very poor. The coming of the new Fords brought a large number of orders for these cars. More low priced cars have been sold as a result of the exhibiting of the new Ford models. Medium priced and high priced cars have been very sluggish with less than the usual number of orders for Christmas deliveries.

## DALLAS

With the new Fords either being driven about the streets or being shown in sales rooms during December retail automobile sales in other makes showed some improvement. Dealers believe 1928 will see the automotive business very active again. The financial and economic situation is good. Actual retail sales of new cars in December, including orders for 2400 Fords, showed an increase of 12 per cent over November. Most of the business involved trades and used car stocks have increased.

## SEATTLE

Automobile dealers say they will sell more cars in 1928 than in 1927, and expect this increased business to begin right after Jan. 1. Ford's announcement has eased the situation somewhat. Total car sales in 1927 are probably 15 per cent lower than last year. Dealers frankly say they do not know just what the used car situation will be when the new Fords appear.

## SAN FRANCISCO

Sales for December exceeded those of same month last year by 15 to 17 per cent. This increase is due to the arrival of new Ford, but a greater part of the gain will not appear in official figures since none of the new Fords were delivered or registered. There is generally optimistic feeling among dealers that new Ford will stimulate sales in other lines, but there is no actual evidence that it has done so. New car stocks are low, but still higher than they were at this date last year. Used car stocks are 30 per cent higher than one year ago. Arrival of new Ford blocked many used car sales.

## LOS ANGELES

December sales are considerably below last month's and December, last year, it being the poorest December in this territory for years. The Ford showing failed to bring the stimulus that was expected to business generally. Orders for new Fords on file with deposits beyond all expectations. New car stocks are higher than at same period last year. Used car stocks are being held within reasonable bounds.

## German Post-Office Uses New Car Type

BERLIN, Dec. 12 (by mail)—In order to improve mail service in country districts, the German Post Office will equip district centers with air-cooled motor cars. A start is being made at 60 centers, and the cars have been ordered. The makers are the Phaenomen company, which this year brought out a small car with a four-cylinder engine. Cooling is effected by a blower fixed on the front end of the crankshaft and blowing the air through a jacket on the cylinders.

The air current is sub-divided, and each cylinder thus gets a charge of cool air which passes from top to bottom. The air is delivered at a speed of 130 ft. per second and at the rate of 12.3 cu. ft. per second. Air-cooled vehicle engines in Germany hitherto have been used almost exclusively on a peculiar type of three-wheeler, still often seen on German streets, with the driven wheel in front and the engine astride of it. The Phaenomen company have been conspicuous builders of this type of three-wheeler up till quite recently, but has now turned to the building of the four-wheeled car.

## Seeks License Plates

WASHINGTON, Jan. 4—Manufacturers of automobile license plates are invited to submit bids for license plates for Porto Rico for 1928 and 1929 by the insular agent of the government with offices in the Whitehall Building, 17 Battery Place, New York. Bids will be received up to Jan. 16. Copies of specifications, blanks, etc., may be secured from the agent.

## Hansa Uses Continental

DETROIT, Jan. 4—Hansa Automobile Works in Varel, Oldenburg, Germany, is bringing out two new models, a six-cylinder with an 11-50 hp. rating and an eight-cylinder with a 16-70 hp. rating, both equipped with Continental engines.

## Coming Feature Issue of Chilton Class Jour- nal Publications

Feb. 18—Statistical Issue—  
Automotive Industries.

## Malay States Reduce Export Duty on Rubber

NEW YORK, Jan. 3—The export duty on rubber from the Malay States is now reduced from three to two cents, Straits Settlement currency, as of Jan. 1, 1928, according to an announcement of the Federal Council of the Malay States. This announcement is made public by Henderson, Helm & Co. who report that the rubber market for the preceding week was fairly steady and quiet, with prices averaging a cent above last week's close.

Arrivals in New York from Dec. 1 to 23 are estimated as 21,200 tons. Stocks in London decreased during the week ended Dec. 17 by 1250 tons to a total of 64,761 tons.

January rubber closed on Dec. 23 at 40.90 to 41.10, as compared with 40.40 to 40.50 the previous week.

## Bentley May Enter Race

INDIANAPOLIS, Dec. 31—The match race between Stutz and Hispano-Suiza which is to be run off at the Indianapolis Speedway in the spring, may be extended to include a British Bentley if negotiations now pending are completed.

## Cadillac Opens Palm Beach Salon

DETROIT, Dec. 31—Cadillac Motor Car Co. has opened a salon for the display of coachwork on the Cadillac and LaSalle chassis in the club and shopping district at Palm Beach, Fla. The salon will feature the latest and finest creations for these two chassis by body designers of the Fisher and Fisher-Fleetwood organizations.

## Automobile Deaths Rank Tenth in Year

WASHINGTON, Jan. 6—The annual report of vital statistics, just issued by the U. S. Bureau of Census, covering 1926 shows a total of 1,285,927 registered deaths in the United States. Deaths due to automobile accidents rank tenth on the list of causes. Heart disease, accountable for 209,000 deaths, ranks first, followed by tuberculosis.

Automobile accidents, excluding collision with railroad and street cars, killed 18,871. Automobile-railroad accidents killed 1556. Automobile-street car accidents killed 464. Airplane, balloon and motorcycle accidents, grouped together, killed 1507. Stated on a percentage basis the death rate per 100,000 population in 1926 from automobiles was 17.9; from street car-automobile causes was 0.4, and from railway-automobile collisions was 1.5 per cent. In all three classes of deaths the rate per 100,000 in 1926 was higher than in 1925.

## Ohio Safety Week Set

COLUMBUS, Dec. 31—In an effort to reduce traffic accidents, the Ohio State Automobile Association will put on a statewide safety week during the week starting April 23, 1928. The work will be carried on through the local automobile clubs, the 700 official garages of the state and has the active support of Governor Donahey.

The tentative plans include a system of free brake testing and headlight inspection to be carried on through the various fire departments of cities and towns.

## Becomes Used Car Dealer

OAKLAND, CAL., Dec. 31—After more than 20 years in the business of selling new cars, C. H. ("Jerry") Collier, former Hudson-Essex dealer in Oakland, has quit the new car business and opened one of the largest used car stores on the coast. Mr. Collier handles only late models, none older than 1925, and all reconditioned.

# Calendar of Coming Events

## SHOWS

All Western Road Show, Los Angeles, March 7-11  
American Electric Railway Ass'n., Public Auditorium, Cleveland...Sept. 22-28  
American Road Builders Association, Public Auditorium, Cleveland...Jan. 9-13  
Amsterdam .....Jan. 21-29  
Automotive Equipment Association, Coliseum, Chicago .....Oct. 22-27  
Berlin .....Nov. 8-18  
Boston, Mechanics Bldg. ....March 10-17  
Brussels .....Dec. 8-19  
Chicago, National Automobile Chamber of Commerce, Coliseum, Jan. 28-Feb. 4  
Copenhagen .....Feb. 23-March 4  
Geneva .....March 16-25  
International Aircraft Show, Berlin, March 23-April 11  
Leipzig, trucks only .....March 4-14  
London, passenger cars .....Oct. 11-20  
New York, National Automobile Chamber of Commerce, Grand Central Palace .....Jan. 7-14

\*Will have special shop equipment exhibit.

Paris .....Oct. 4-14  
Rio de Janeiro .....May 3-13  
Salon, Automobile Salon, Inc., Hotel Drake, Chicago .....Jan. 28-Feb. 4  
Salon, Automobile Salon, Inc., Hotel Biltmore, Los Angeles .....Feb. 11-18  
Salon, Automobile Salon, Inc., Palace Hotel, San Francisco...Feb. 25-March 3  
United States Good Roads Show, Des Moines .....May 28-June 1

## CONVENTIONS

American Electric Railway Ass'n., Public Auditorium, Cleveland...Sept. 22-28  
American Road Builders' Ass'n., Hotel Hollenden, Cleveland .....Jan. 9-13  
American Road Builders Association, Banquet, Hollenden Hotel, Cleveland .....Jan. 11  
Automotive Equipment Association, Grand Hotel, Mackinac Island, June 10-16  
Automotive Equipment Association, Coliseum, Chicago .....Oct. 22-27  
National Automobile Dealers Ass'n., Annual Meeting Palmer House, Chicago .....Jan. 31-Feb. 2

National Battery Mfrs. Ass'n., Chicago .....Feb. 15-16  
National Foreign Trade Council, Houston, Texas .....April 25-27  
United States Good Roads Association and Bankhead National Highway Association, Des Moines...May 28-June 1

## S. A. E. National

Detroit, Jan. 24-27—Annual Meeting.

## Sectional

New England, Jan. 11—Scientific Valve Reconditioning—Jack Frost.  
Southern California, Jan. 13—Ignition, Magneto and Battery Distributor Systems and Servicing of the Entire Electrical System—E. E. Tattersfield, Robert Parker and others.

## RACE

Daytona Beach, Fla., series of stock car races and world's speed trials, Feb. 15-23